THE NEWSPAPER OF INFORMATION SYSTEMS MANAGEMENT
August 24, 1992 · Vol. XXVI · No. 34 · 114 Pages · $2/Copy · $48/Year

COMPUTERWORLD

Insurer cancels host policy

SystemPro network replaces mainframe/mini hodgepodge, slashing costs

BY CAROL HILDEBRAND
CW STAFF

COLUMBUS, Ohio — The Midland Mutual Life Insurance Co. is putting the final accents on a personal computer-based network that has turned its old data center into a company gymnasium. In the process, the $1 billion company has flattened the organization and sliced information systems costs by several million dollars.

Gone is a conglomeration of an IBM 4381, two Hewlett-Packard Co. 3000 Model 70s, an IBM System/36 and a Digital Equipment Corp. VAX 6210. In its place is a PC network anchored by 22 Compaq Computer Corp. SystemPros that serve about 315 clients. The system, in place since July 1991, is now getting the finishing touches as the company sends its big iron to the dustbin.

The difficulty of supporting various software packages for each of the hardware platforms played a major role in the decision to downsize. The company converted data from the mainframe applications over to one standard, PC-based insurance application for all its business groups, but it did not attempt to port the host-based software itself. Jerry Whetnall, assistant vice president of corporate sys-

Continued on page 6

Downsizing enticements

Storage savings: A 622M-byte VAX RA91 disk drive costs abaut $40,000. With PCs, The Midland can get faur times the starage for one quarter the price.

System modularity: Using ane vendor (Compaq) lets The Midland swap in faster motherboards more easily.

Lights-out processing: Batch jabs, like posting premium payments, can be activated by programmers fram a PC at hame.

MAINFRAME METAMORPHOSIS

'Old-timers' wrestle with dinosaur image

Second in a two-part series on mainframe computing.

BY MITCH BETTS
CW STAFF

For laid-off information systems executive Curt Beaumont, the numbers told the story: hundreds of resumes sent out nationwide in 18 months, scores of job interviews and zero luck. That is how brutal the job market can be for IS executives with mostly mainframe experience.

"Because of my concentration on large mainframes, I became a dinosaur," said Beaumont, 47, who had to leave a 26-year IS career and a $95,000 salary for a $20,000 job as a cellular telephone consultant in Framingham, Mass. Money problems led to the breakup of his marriage and a new self-image. "I've had to downsize myself — my ego, expectations and

Continued on page 12

Claudio Edinger

Former mainframer *Fred Corey picked up PC skills on his own, which saved his career*

HP aiming stations at office desktops

BY MARYFRAN JOHNSON
CW STAFF

CHELMSFORD, Mass. — While Hewlett-Packard Co.'s Unix workstations still play second fiddle to Sun Microsystems, Inc. in mainstream commercial accounts, HP's workstation division here is hatching new strategies to step out of Sun's shadow.

An expected Sept. 15 announcement of more powerful new workstations based on HP's 7100 "Thunderbird" Precision Architecture-RISC chip — which doubles the clock speed of the current chip to 100 MHz — should give the vendor an even more compelling price/performance display for commercial customers.

Even so, only an estimated 15% of HP's $1.6 billion workstation revenue last year came from sales to business environments. The bulk of the firm's revenue still comes from scientific and technical workplaces.

"The good news is that most of the commercial workstation opportunity is a green field opportunity," said Gary Eichhorn, general manager of HP's workstation systems group. "We are seeing a lot more business, more activity, more bids and more long-term projects."

Wanting it all

Commercial users said flashy performance is only a fraction of the larger equation involved in buying workstations. Hardware reliability, long-term costs of ownership, choice of software applications and reputation for

Continued on page 14

Users doubt Wang's comeback potential

BY KIM S. NASH
CW STAFF

LOWELL, Mass. — Although Wang Laboratories, Inc.'s Chapter 11 bankruptcy protection filing last week shields the money-losing minicomputer firm from hungry creditors, it also erects a wall between Wang and its customers.

The majority of a dozen-plus users interviewed last week — along with another 256 surveyed by the CW Database Division — said they are no longer comfortable doing business with Wang.

For VS faithfuls, including American Express Co., the Port of Seattle and W. R. Grace & Co., Wang's $45.4 million operating loss for fiscal 1992 on sales of $1.9 billion and subsequent Chapter 11 filing came as no surprise. It largely served to reaffirm plans to vacate the VS or replace Wang service with that of independent third parties, they said.

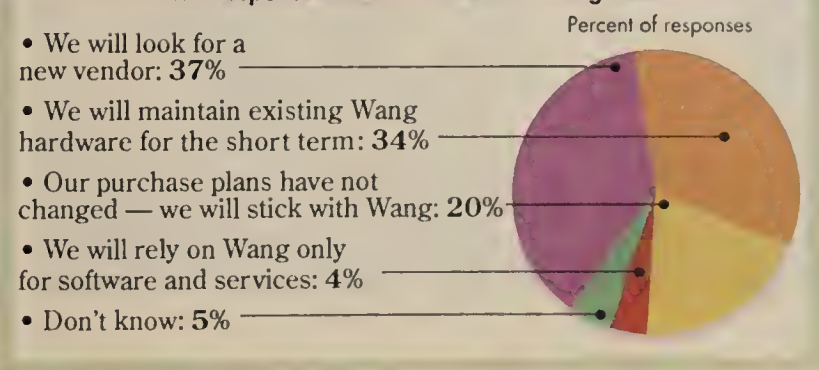
"We have a great deal of sympathy for Wang. I offered my condolences to [Chairman] Rick Miller," said Marilyn Phillips, executive director at Haynes and Boone, a $60 million Dallas-based law firm that is dumping seven VS models and 340 Wang

Continued on page 16

What to do?

How will Wang's bankruptcy affect your future plans?

291 responses from 256 users at Wang sites



Source: CW Database Division

NEWSPAPER

INSIDE

Lotus may miss its year-end shipment schedule for 1-2-3 Release 2.0 for Windows. Page 4.

IBM confirms it will use the Mach 3 micro kernel instead of the NT kernel in the next generation of OS/2. Page 4.

Expecting an eight-way mainframe processor this year from IBM? Don't hold your breath. Page 6.

CA, Novell seek to bring host systems management to networked PCs. Page 10.

Executive Report — Spin-offs: Turning IS into dollars. Page 81.

IN THIS ISSUE

NEWS

4 **IBM** and **Microsoft** reveal battle plans at last week's Windows and OS/2 Conference in Boston.

4 Hoping to increase its value to corporate accounts, **Borland** offers support initiatives and a priority hot line.

6 User reaction is mixed as **IBM** announces that it will be late in delivering a mainframe upgrade.

7 **DEC** announces a family of PCs that will offer upgradability from 386DX to 486DX to 486DX2 by swapping in daughtercards or CPUs.

8 **Intecom** to announce that it has integrated a variety of features into its Integrated Business Exchange PBX.

10 **Computer Associates** says it will port its CA-Unicenter systems management software to **Novell**'s NetWare servers.

10 **IBM** and **Sears** team up to form a network outsourcing company called **Advantis**.

14 Minicomputer users complain and **HP** listens: The vendor is expected to announce a shift in sales and support strategies to appease small to midsize customers.

20 **The Department of Energy** and **NASA** select **Sprint** to boost bandwidth in three national research networks.

Quotable

"This is the worst stretch of unemployment in the data processing field I've seen in 10 years."

ROGER O'CONNOR
EDWARD PERLIN ASSOCIATES

On unemployment among IS professionals with mainframe backgrounds. See story page 1.

DESKTOP COMPUTING

53 GUIs need more than a fast CPU: A look at their graphics requirements.

60 Technology Analysis: **Symantec**'s Norton Desktop for Windows 2.0 has gotten faster; **Hewlett-Packard**'s ambitious NewWave 4.0 is still complicated.

WORKGROUP COMPUTING

61 The Navy's electronic personnel system has put its 55 tons of paperwork out to sea.

ENTERPRISE NETWORKING

69 **3Com** supports SNMP with its new LinkWatch product.

LARGE SYSTEMS

71 **Maximum Strategy** announces a multitasking RAID system.

APPLICATION DEVELOPMENT

77 The quest of application development centers.

77 **TI** will port its CASE tools to **Sequent Computer**'s high-end Unix machines.

MANAGER'S JOURNAL

89 A nonprofit computer security group is working to establish certification as a must for members of its field.

EXECUTIVE REPORT

81 Companies try to turn technology into cash by spinning out IS service businesses.

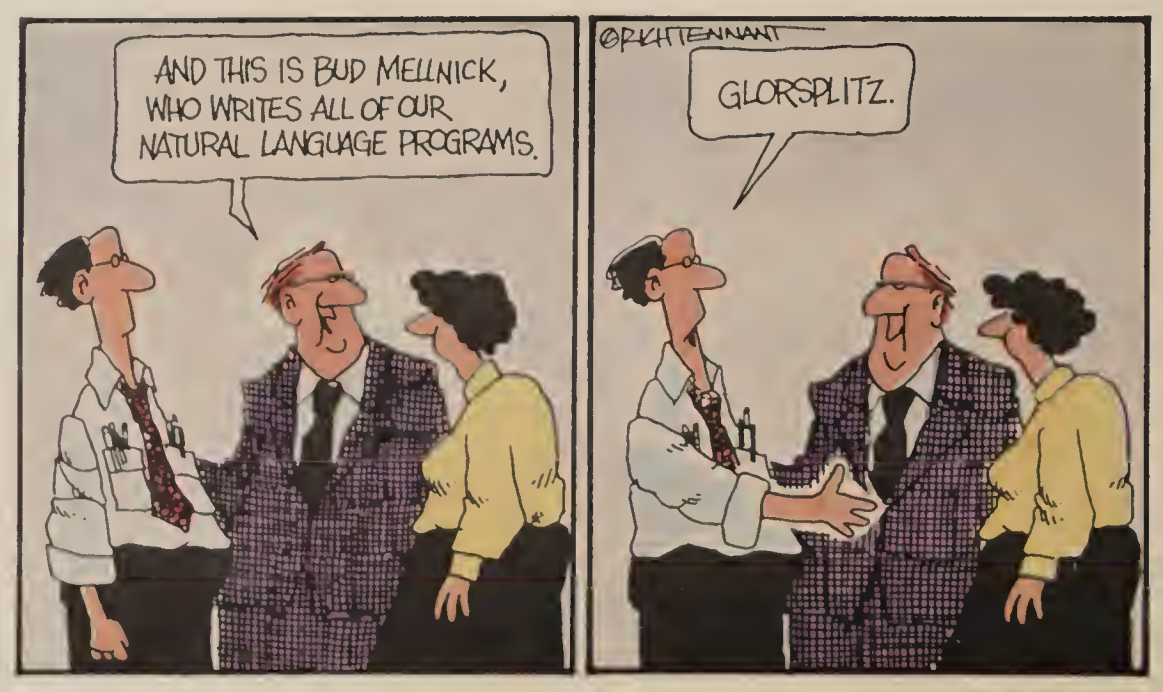
IN DEPTH

85 Are your cost estimates usually off? We have some guidelines, culled from IS chiefs, that can help put them on track. By Albert L. Lederer and Jayesh Prasad.

DEPARTMENTS

6, 14 News Shorts
25 Advanced Technology
28 Editorial
90 Calendar
95 Intelligence Files
97 Computer Careers
104 Marketplace
108 Stocks
109 Computer Industry
110 Inside Lines

The 5th Wave



EXECUTIVE BRIEFING

■ **Times are hard for IS professionals with mainframe backgrounds.** Application downsizing has thrown many out of work and created the worst IS job market in 10 years, some recruiters say. The lucky ones are those who have sharpened skills in PCs and networking, where plenty of opportunity still exists. **Page 1.**

■ **Wang scrambles to remake itself** into a software/service company after filing for bankruptcy last week. Meanwhile, current VS minicomputer users are acting on contingency plans, with many set to move to IBM. Wang hopes its Office 2000 imaging-enabled office automation scheme will bring a smaller, leaner company back to life. **Pages 1, 16, 17.**

■ **Hewlett-Packard cranks up efforts to sell Unix workstations to commercial sites,** which today make up only 15% of its workstation business. One example: HP will start pushing client workstations to Series 800 server customers and the millions of LaserJet printer users. **Page 1.**

■ **Many IS shops today share a common problem:** Technology-cost estimates are missing their marks. A recent study of 115 organizations found that 63% of their projects went over budget. Tips for avoiding this fate include assigning the initial estimate to final developers, conducting feasibility studies and controlling user changes. **Page 85.**

■ **IBM and Sears team up** in hopes of becoming a powerhouse in the network outsourcing market. But the U.S.-oriented, Systems Network Architecture-centric venture may initially be at a disadvantage against global competitors. **Page 10.**

■ **Microsoft and IBM were looking ahead** at last week's Windows & OS/2 Conference. Microsoft is lining up troops to help push Windows NT into the market, and IBM is sketching out plans for OS/2's next generation, which will likely include the Mach 3 Unix kernel. **Page 4.**

■ **Many user companies are trying to turn huge technology investments into cash** by entering a hot new field: computerized distribution logistics. Companies spinning off for-profit distribution units include Roadway, Caterpillar, TNT Transport Group, Carolina Freight and Ryder Systems. Meanwhile, older IS spin-offs enjoy mixed success. **Page 81.**

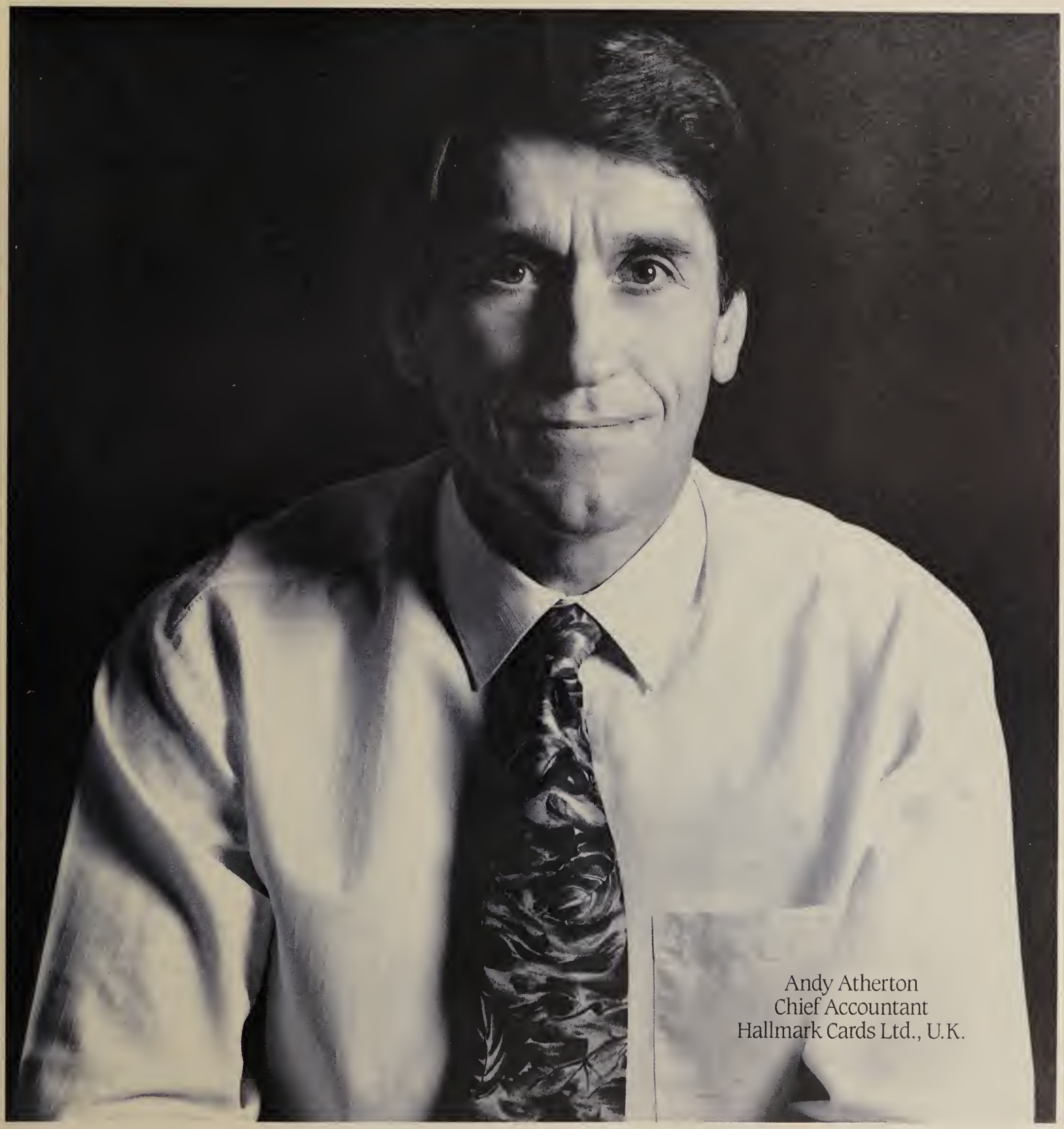
■ **A plan by CA and Novell to link up** in a "technology sharing" alliance draws excited reactions from users. Initial product plans will tie CA's Unicenter management tools to Novell's NetWare operating system. **Page 10.** Don't look for a trend in LAN management. The field remains fragmented, with users focusing on tools designed to manage a particular type of LAN. **Page 69.**

■ **IBM delays its eight-way mainframe,** originally planned for delivery late this year, until next year. Customer responses range from ho-hum to "Help! I'm running out of horsepower!" **Page 6.**

■ **Imaging systems are making their mark** in manufacturing firms, where they bring efficiencies in the handling of engineering drawings. **Page 71.**

■ **Graphical user interfaces bring some excess baggage,** such as the need for high-performance graphics gear. **Page 53.**

■ **On site this week:** The Midland Life Mutual Insurance Co. believes in simplicity, so it junked a tangle of different vendors' minicomputers and mainframes in favor of a Compaq SystemPro-based local-area network. **Page 1.** The migration to open systems can be a bumpy road, as Hughes Electronics Space and Communications Division can attest. **Page 72.** It's a federal government success story at the U.S. Navy's Human Resource Office, where a local-area network-based personnel system is being used as a model for other agencies. **Page 61.**



Andy Atherton
Chief Accountant
Hallmark Cards Ltd., U.K.

"These days, the first thing a software company needs is a good pair of ears. That's what makes CA special. They listen. They care about what I have to say. I'm very happy with how they've improved our financial software solution...especially with the changes I recommended myself."

CA90s
CA's Computing Architecture For The 90s.

Listening. It's one of the most important things we do. And for 16 years, we've been doing just that with each of our clients. From the smallest of businesses to over 95% of the Fortune 500. We're committed to doing whatever it takes to make them happy.

And they keep telling us how.

COMPUTER® ASSOCIATES
Software superior by design.

© Computer Associates International, Inc., One Computer Associates Plaza, Islandia, NY 11788-7000. 1-800 CALL CAI. All product names referenced herein are trademarks of their respective companies.

Borland to flesh out IS initiative

BY MARK HALPER
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. this week will launch a series of support programs as part of an initiative to increase its presence in corporate accounts.

The software vendor will begin offering support contracts, including options for a compact disc (CD) read-only memory-based technical support database, a priority hot line that provides fast access to senior technical support engineers and a priority bulletin board service on CompuServe.

This week's programs are expected to be followed by new marketing alliances with systems integrators and by a series of corporate-oriented educational seminars [CW, June 15].

Borland's corporate accounts program also includes revisions to its licensing program; these revisions are aimed at easing licensing restrictions to its products. Earlier this summer, the company entered into a licensing arrangement with Price Waterhouse under which the accounting firm will buy some 25,000 Borland products [CW, July 27].

Among the programs to be launched are the following:

- The CD-ROM program, called Borland KnowledgeBase CD. It gives corporate and government customers and developers access to technical information on problem reports, workarounds and other detailed information on Borland products.
- Borland is providing one CD with information on its application products and another that supports its language products. It will charge $495 a year.
- The Borland Priority Hot Line, priced at $500 a year for its database and spreadsheet products and $750 a year for Borland C++ objected-oriented programming language, gives customers toll-free phone access to a technical engineer. The Borland VIP CompuServe Bulletin Board ($500 per year) allows users to access all Borland forums and a special message board, and it includes a guaranteed four-hour response time to questions.
- The Borland Premium Support plan, which includes a comprehensive package of toll-free support, the CompuServe Bulletin Board and both KnowledgeBase CDs. The toll-free support and bulletin board includes separate contacts for each of four Borland products: dBase, Paradox, Quattro Pro and C++. It is priced at $3,995 per year.

Tardy 1-2-3 for Windows 2.0?

Lotus making sure new features make it more competitive with Excel 4.0

BY ROSEMARY HAMILTON
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. may miss its year-end shipment deadline for 1-2-3 for Windows Release 2.0, a company executive confirmed last week.

A Release 2.0 delay could be another setback for Lotus, which has been struggling to gain a strong foothold in the Microsoft Corp. Windows spreadsheet market since it arrived in 1991, already far behind Microsoft's lead and with an initially buggy product. However, Bob Holmes, a computer technology research analyst at Southern California Gas Co., said, "It would be better that they'd be late than deliver something like Release 1.0."

Frank Ingari, the company's vice president of marketing, said there "could be a modest adjustment" to the delivery schedule "but no major ones."

Slip-sliding away

In March, Lotus committed to a series of shipment deadlines for its spreadsheet products and promised to ship Release 2.0 by year's end. Release 2.0 is supposed to contain performance boosts and ease-of-use features, as well as deliver the initial implementation of the Chronicle workgroup application technology.

"The only thing I'll say is, something happened between then and now: Excel 4.0," Ingari said. In fact, he said the ship date may slip some because Lotus is reviewing additional features to include in Release 2.0 that would make it competitive with Excel 4.0. He did not specify what those features might be.

Lotus' Ingari: *There 'could be a modest adjustment' to the schedule*

"They aren't showing they can out-innovate Microsoft in spreadsheet features," said Jeff Henning, an analyst at BIS Strategic Decisions in Norwell, Mass., who estimated that Lotus now holds about 24% of the Windows spreadsheet market.

Ingari said that any additional features under consideration are the "5% fringe on the edge," adding that Lotus will not make major changes to the product. Ingari would not say when the product would ship to beta-test sites, nor would he estimate how long the beta program would take other than to say that beta tests can run anywhere from 10 weeks to six months.

Bill Higgs, a vice president at Computer Intelligence/Infocorp in Santa Clara, Calif., said he does not believe that the Chronicle technology could further complicate the beta-test program, even though it is the first time Lotus will be adding workgroup features to 1-2-3. Higgs said Lotus has been demonstrating Chronicle for nearly a year and is likely working with stable code at this point. "But any time you do a major revision, and [Release 2.0] is one, you are looking at a beta period of two to four months," Higgs added.

Ingari also said Lotus would rather take the heat for missing the deadline than stick to the schedule and release a buggy product.

IBM, Microsoft reveal plans for next-generation systems

BY ROSEMARY HAMILTON
CW STAFF

BOSTON — IBM and Microsoft Corp. used the Windows & OS/2 Conference, held here last week, to reveal more of their battle plans for the desktop.

IBM, riding high on its claims of 1 million OS/2 2.0 shipments, said work is under way for the next-generation OS/2 and that the company will likely proceed with the Mach 3 micro kernel from Carnegie Mellon University instead of the Microsoft Windows New Technology (NT) kernel.

NT "is out of the question," while the Mach kernel is the "likely foundation . . . to move to an architecture of portability and much more object-oriented technology," said Fernand Sarrat, assistant general manager in charge of market development in the Personal Systems Group.

"This would move them somewhat more toward the Unix camp and could give them a more portable operating system," said Bill Higgs, a vice president at Computer Intelligence/Infocorp in Santa Clara, Calif.

The micro-kernel architecture will allow IBM to build a core operating system and service layer on which the "OS/2 personality and AIX personality" could be built, Sarrat said.

Microsoft, meanwhile, said it is putting together an NT infrastructure that will help propel the 32-bit operating system into the market.

Dwayne Walker, the company's director of Windows NT and networking products, said the up-front work could be "1.0 schizophrenia," meaning the lag time after new software is shipped before users are hesitant to embrace it.

Microsoft will unveil details next month on partnerships, channel strategies and training plans, Walker said. For instance, Sequent Computer Systems, Inc. is expected to soon announce its support of NT to run on its multiprocessor systems.

"They are putting in place the background works so they aren't left sitting without applications to take advantage of NT," said John Dunkle, president of Workgroup Technologies, Inc.

In addition, Walker said, Microsoft is on schedule to provide end users with beta-test copies beginning next month that it plans to ship to 20,000 users.

Both companies could not pass up an opportunity to take shots at each other. IBM said now that it had shipped 1 million copies of OS/2 2.0, and it is waiting for Microsoft to announce support for its applications.

Aimed at Microsoft, Walker's response was: "As long as they can run Windows apps, they have our support."

CORRECTIONS

Because of an editing error, Bill Wilson, IBM's assistant general manager, was inaccurately quoted in a story called "Big iron adapts to avoid going the way of the dinosaur," [CW, Aug. 17]. He said IBM "will have an eight-way processor sometime next year," and did not confirm a ship date of this year.

.....

In the story "DRAM advances pave way for new adventures" [CW, Aug. 17], Mitsubishi was referred to as a licensee for Rambus' synchronous dynamic random-access memory. In fact, Mitsubishi has developed its own and competes with Rambus.

Sun cuts sales tags

BY MARYFRAN JOHNSON
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. was active last week on several fronts, rolling out announcements on price cuts, multimedia training tools and its own "rightsizing" project with Oracle Corp.

The company unveiled price reductions of 10% to 35% for its mail-order SunExpress products and began shipping the first in a series of multimedia, on-line training tools for first-time Sun users.

Sun also highlighted its in-house "rightsizing" project with Oracle. This joint development effort is focused on creating the next generation of Oracle's financial and manufacturing applications for use at more than 50 Sun manufacturing facilities worldwide by 1994.

The companies are billing their efforts as the first time a distributed computing environment will address multisite, multiplant and multilingual requirements for a global manufacturing network.

Optimal usefulness

Sun is replacing its current set of mainframe-based database management system software with the Oracle 7 product. The co-development work will optimize Oracle's manufacturing and financial applications for the Sun 600 MP line of multiprocessor servers.

The mail-order price plunge moved SunExpress, one of Sun's subsidiaries, from list pricing to "street pricing" for customers ordering a variety of peripherals and software packages by phone. SunExpress includes more than 1,000 products from Sun and third-party suppliers.

The multimedia training set, called SunTutor, combines on-line audio, video, text, graphics and simulation in a self-paced training course that condenses more than 16 hours of classroom lectures. The set is scheduled to ship next month, priced at $395 for a single user, with 10- and 100-user site licenses available at $1,995 and $4,995, respectively.

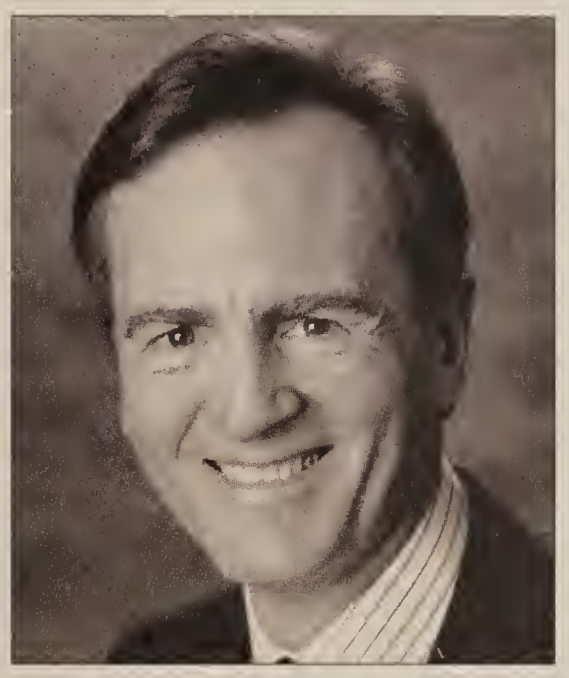
"Sun has done a nice job getting on-line documentation on CD-ROMs, which makes it much more accessible for users," said Tom Kucharvy, president of Summit Strategies, Inc. in Boston.

Kucharvy noted that other workstation vendors, Hewlett-Packard Co. in particular, are also expected to take advantage of multimedia training tools to make their machines easier to use.

LOOK WHO'S COOPERATING ON A COOPERATIVE-SERVER DATABASE

"Oracle's always been the leader in building database technology. One of the great things about Oracle's approach is that they're hiding the differences between all the machines out on the network running on various platforms."

Bill Gates
Chairman and CEO
Microsoft Corporation



"ORACLE7's breakthrough in hiding technological complexity is analogous to the ease-of-use breakthroughs accomplished by the introduction of the Mac in 1984."

John Sculley
Chairman and CEO
Apple Computer, Inc.

"The fundamental problem with early client-server database management systems is that applications cannot access data on more than one server without a lot of extra programming. This programmatic approach to accessing data on multiple servers is in stark contrast to the totally automatic approach provided by ORACLE7."

Larry Ellison
President and CEO
Oracle Corporation

"With HP systems and ORACLE7, our customers will have the desktop to high-end performance they need for a fraction of the cost of mainframe computing solutions."

John Young
President and CEO
Hewlett-Packard Company

"ORACLE7 is really solving the complexities of the distributed computing environment cost-effectively. Plus, it supplies the reliability and security that are required in a distributed computing environment. In fact, because ORACLE7 matches Sun's client-server model so well, we have chosen ORACLE7 as one of our key databases."

Scott G. McNealy
President, CEO and
Chairman
Sun Microsystems, Inc.

The world's largest database company introduces a revolutionary new technology called a cooperative-server database. A cooperative-server database hides the complexity of computer networks by enabling applications to access data located on multiple computers just as if all the data were stored on a single computer. In this way, a cooperative-server database simplifies application building and improves decision making by making access to information easier. . . much easier.

ORACLE®

Software that runs on all your computers.

For more on ORACLE7, just call 1-800-633-1071 Ext. 8184. Find out what these industry leaders are excited about.

© 1992 Oracle Corporation. ORACLE and ORACLE7 are registered trademarks of Oracle Corporation. Call for product, service, and seminar information. In Ontario or Quebec call 1-800-263-8972, elsewhere in Canada call 1-800-263-8969.

NEWS SHORTS

Landmark Systems lays off 36

Feeling some fiscal pressure as it attempts to broaden its mainframe-centric focus, Landmark Systems has laid off 36 people, about 15% of its work force. Kathy Clark, senior vice president and co-founder, said the firm is refocusing its strategy to emphasize performance management products across all platforms, not just mainframes. Clark said the firm has also hired a new vice president of development and technology, John Hunter, a 23-year IBM veteran who most recently was IBM's director of communications architecture [CW, Aug. 17].

. . . . . .

DEC, Ingres end bundling deal

Digital Equipment Corp. and the Ingres Products Division of The Ask Cos. announced last week that DEC's Ultrix SQL will no longer be bundled with DEC's Ultrix operating system. A new arrangement went into effect last week by which Ingres will provide a migration kit to Ingres 6.4, the latest release of the Ingres relational database management system, for licensed Ultrix SQL customers. It will also provide a migration path from Ultrix to DEC's OSF/1 operating system. Oracle Corp. will offer a migration kit for Ultrix SQL users to the Oracle RDBMS. DEC plans to port its Rdb to OSF/1.

. . . . . .

Unix companies get together

Unix System Laboratories, Inc. (USL) last week struck a deal with The Santa Cruz Operation (SCO) that aims to increase the number of Unix applications on the market. Under the agreement, USL will supply the SCO with a host of application development tools, which SCO will include in future versions of SCO Unix, SCO Open Desktop and SCO C++. The deal essentially adds another convert to USL's Unix System V, Release 4 operating system. The SCO's installed base of 700,000 Unix systems is based on an earlier version of System V Unix.

. . . . . .

Humana cuts back, plans IT spin-off

Humana, Inc. last week disclosed that it would trim its administrative staff by 400 — a move that will likely affect information systems operations, according to a company spokesman. The health care firm will launch an information technology subsidiary Oct. 1 that will offer quality assurance, technology assessment and management of clinical information systems to the hospital industry. The mid-month retirement of Humana IS director Fred Pirman Jr. is unrelated to either the layoffs or the reorganization. However, Pirman's office will remain vacant until the effect of both moves on internal IS can be determined.

. . . . . .

Toshiba joins notebook price war

Next Monday, Toshiba America Information Systems, Inc. will attempt to shed its premium price image in the notebook computer market, according to sources close to the company. Toshiba plans to introduce three new systems, including an Intel Corp. 80386SX-based notebook with 2M bytes of random-access memory and a 60M-byte hard drive and two systems based on the 25-MHz 386SX. Street prices could start as low as $1,500.

. . . . . .

Short takes

Last week, F. Grant Saviers, recent vice president of **DEC**'s PC systems and peripherals, left DEC to become chief operating officer at **Adaptec, Inc.**, a Milpitas, Calif.-based vendor of Small Computer Systems Interface host adapters for PCs. . . . **Autodesk, Inc.** divested itself of two companies that made up its Information Systems Division: **American Information Exchange** (Amix) and **Xanadu Operating Co.** Amix will continue its operations as an independent purveyor of digitally stored information. . . . Genie, an on-line service provided by **General Electric Co.**, announced a new on-line RoundTable network for **Microsoft Corp.** Windows and New Technology users, developers and analysts that is independent of Microsoft and is slated to be open for public access today. . . . **Xircom, Inc.** announced the CreditCard Ethernet Adapter, a PCMCIA flash-memory card that lets users connect to an Ethernet 10Base-T network. Pricing is expected to be about $445.

More news shorts on page 14

IBM 8-way processor delayed

BY JOHANNA AMBROSIO
CW STAFF

SOMERS, N.Y. — IBM will not deliver a mainframe upgrade in the fourth quarter as originally planned. Instead, the company will unveil the new processor sometime early next year.

Speculation varied about why the date slipped, with some observers pointing to possible technical problems and others saying that the decision had more to do with marketing. A company spokeswoman confirmed that the much-vaunted eight-processor model will not be announced until next year and said that in any case, the processor is not late. "We have not committed to customers either announcement dates or delivery dates of the eight-way."

Customer reactions were mixed. Some said they were fast running out of mainframe horsepower, would soon need to make a decision about what to do and might look at non-IBM machines as alternatives. Others said the slippage would not affect them.

The new processor is said to compute about 410 million instructions per second (MIPS) vs. about 235 MIPS for the current top-of-the-line Enterprise System/9000 Model 900. Each of the eight processors will handle about 50 MIPS, compared with 40 MIPS in today's models, which have a maximum of six processors.

One customer said IBM approached him about taking early delivery "by year's end, and we considered it. We made no commitments, but they never got back to us," the user said. "If someone is not trying to close the deal, the product is probably not for sale."

Hanging on

Tom Loane, vice president of computers and communications at Alamo Rent-A-Car, Inc. in Fort Lauderdale, Fla., said he installed a Model 640 last month to complement the Model 900 Alamo already had. He said he was looking forward to the new machine in order to consolidate everything onto one processor. "We're OK until the end of the year, but by Washington's birthday, I will need more capacity. I'll have to do something about that — maybe upgrade the 640 or add another machine."

Doug Underhill, vice president at CSX Technology in Jacksonville, Fla., said the delay would have "no impact" on his shop. "There is an appeal to being able to pack more work loads into a single processor. But it wasn't something that I need right now."

Observers cited different causes for the delay. Jim Cassell, an analyst at Gartner Group, Inc. in Stamford, Conn., said IBM's European operation disagreed with the decision to announce the new processor this year because it would disrupt the momentum of sales for the existing ES/9000 models. The firm will likely announce the machine in April, to ship by July, he said.

Jay Stevens, an analyst at Dean Witter Reynolds in New York, suggested that the delay might be due to technical problems with getting the MVS operating system to run across eight processors as a single unit. "IBM engineers have told me that they've had difficulties getting MVS tuned for the eight-way," he said. "But Amdahl has said 'No way,' so I don't know who's speaking truth." Nevertheless, Stevens said, he still expects IBM's new machine to be introduced in February and to be available by March.

But Amdahl Corp., which has promised its eight-way for the fourth quarter, may beat IBM to the punch. "That would be embarrassing for IBM," Stevens said. "The only customers who really need the upgrade path right now are the largest ones — the most important."

Insurer cancels host policy, chooses SystemPro network

CONTINUED FROM PAGE 1

tems at The Midland, acknowledged that the job was a big one. However, he said it was broken down into three stages during the course of about seven months from the end of 1990 to July 4, 1991, when the final mainframe data came over.

"We were building a Tower of Babel," Whetnall said. "I wanted to get to a single platform."

Whetnall added that although the company did take a financial hit when it had to buy out the leases on the big boxes, it made the money back within 18 months. "If I had stayed with the old system, my data processing expenses this year would have been about $6 million," he said. "With the downsizing, it's just under $2 million. You can cost-justify this stuff real easy.

"I can buy an entire 1.26G-byte system for less than I paid for a disk drive for a VAX," Whetnall added.

The end result has been both a money-saver and a business enhancer, he said. Overall, staff dropped from 360 to 205; Whetnall said his IS staff plummeted from 55 to today's low of 20 as a result of the downsizing. He has also decentralized his staff as the units moved apart.

Each unit has a couple of programmers assigned specifically to it that report to the general manager of that unit. This way, each group is free to concentrate on its priorities without having to wade through a centralized IS bureaucracy.

"I end up being the auditor, standards enforcer and chief of police," Whetnall said.

He said the mandate for change began as the 86-year-old firm reorganized itself into four separate business units in 1990. The impetus for that reorganization came from the chairman of the board at the company, which had a total of about 150,000 policies last year and plans to grow its business by about 10% this year.

Cheryl Currid, president of consultancy Currid & Co., pegged such high-level support as vital. "If you don't have top management that can make the leap of faith to say, 'Go ahead and try it,' you'll never get out of the starting gate," she said.

Whetnall said a major problem with a centralized data center was that when one group had a special need or upgrade, the other units suffered as well.

With the new setup, the servers are divided among each group; each unit has one server that handles standard business applications such as word processing, one or two servers that run the customized administration software for the insurance business and a test server that lets Whetnall try out any fixes or enhancements without having to use the actual production system.

He said the relatively low cost of PC servers enables him to easily afford the redundancy.

Dividing his system this way gives Whetnall the flexibility to separately address different business needs, as well as add and subtract staff support and computing power as needed, he said.

The system runs Novell, Inc. NetWare v3.11 over an Ethernet network with a fiber-optic backbone and coaxial connections to the workstations. Whetnall said he is looking to convert to a complete fiber-optic network by next year.

The Midland's 18,000 insurance brokers, scattered across the country, access the system via a wide-area network linked into CompuServe. "They just call the local CompuServe number and get routed onto our set of servers," Whetnall said.

Grid convertible revs up pen market

Combination notebook/pen-based tablet may draw sales where other products failed

BY MICHAEL FITZGERALD
CW STAFF

FREMONT, Calif. — Grid Systems Corp. will expand its pen computing line in the early fall with a hybrid product that it hopes will succeed where rival Momenta International, Inc. failed, sources said.

The Grid "convertible" will combine a pen-based tablet with a notebook computer, the sources said. Based on Intel Corp.'s low-power 20-MHz 80386SL chip, the device will feature two to three hours of battery life and a 120M-byte hard disk, as well as a back-lit screen. The product will also have two Personal Computer Memory Card International Association drives for flash-memory devices and is expected to be priced at $2,995, the sources said.

Momenta, which was the first company to produce a combined pen and notebook computer system, drew little interest, in part because its sleek machine uses a proprietary operating system and costs more than $5,000.

Surprisingly, the Grid machine is not expected to come with PenRight, Grid's operating environment. Instead, it will offer Go Corp.'s PenPoint or Microsoft Corp.'s Windows for Pen Computing software.

Sources described the system as between 2 in. and 2½ in. thick, slightly thicker than the normal notebook. From above, a user would see what appears to be just a screen with a pen, but pressing two indentations, one on each side of the screen, tilts the screen up and locks it into place behind the keyboard.

"It's a no-compromises notebook that also comes with a pen," one source said.

Kenneth L. Dulaney, Grid's director of laptops/pen-based marketing, refused to comment on specifics but did say, "We will have a pentop product by the end of the year."

Sources close to Momenta, meanwhile, said the company has ceased operations. One source said Momenta has not declared bankruptcy but has fired all but one employee and is trying to sell its technology.

Last week, Momenta's phones were being answered by a Momenta-employed receptionist, but Angelo Penzani, Momenta's spokesman, did not return repeated calls.

DEC to give PCs modular upgrades

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. will announce a new family of personal computers that offer a modular upgrade path across the line.

Dubbed the DECpc LP family, the products can be upgraded from 386DX to 486DX to 486DX2 processors by swapping in daughtercards or CPUs. They range in price from $899 to $2,199.

"While other vendors also have a modular approach, DEC's plan is to offer a single product family, from the low to the high end, that will allow users to make upgrades by merely replacing the CPU daughtercard," said Steve Widen, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

DEC will maintain seven worldwide integration centers with inventories of common parts. Users will have fast access to upgraded systems via daughterboards.

Definite draw

Some users praised DEC's pricing and the modularity of the new PCs. "The modularity of the systems would be a selling point for us. To be able to upgrade without trashing everything would be helpful," said John Limongelli, an analyst at Elliot Hospital in Manchester, N.H.

"It sounds as if this pricing brings them more in line with the competition," added Bill Lodge, project manager at Turner Corp., a non-DEC user in New York that recently downsized from IBM mainframes to Banyan Systems, Inc.'s Vines PC networks. "DEC has interesting products coming down the line with the Alpha chip and support of NT, but until now they've never had a serious presence in the PC market."

Others were skeptical, however, about DEC's strategy and its ability to win over non-DEC sites.

"DEC has improved their PC line, but when they pressed us to go with their PCs as a big DEC and big IBM account, we turned around and asked them why we should switch," said a user at a large banking firm who requested anonymity.

"Modular PCs are somewhat attractive, but users also become locked into a vendor's PC line because you can only buy the upgrade from them," added Peter Kastner, an analyst at the Aberdeen Group, a market research firm in Boston.

PC multiprocessing on horizon if AST rollout is any indication

BY MICHAEL FITZGERALD
CW STAFF

SANTA CRUZ, Calif. — When AST Research, Inc. showed off its latest server running The Santa Cruz Operation's (SCO) multiprocessing Unix last week, the infant personal computer multiprocessing business took another step forward.

Analysts pointed to this as another indication that microprocessor-based servers will soon be capable of truly replacing minicomputers and mainframes.

"This is a trend," said Leslie Fiering, an analyst at Gartner Group, Inc. in Stamford, Conn. "Users are looking at PC boxes which have horsepower, reliability, scalability and security, and it's creating a tremendous demand in the marketplace for bringing mini and mainframe stuff down to this level."

Fiering cited high availability and better system security features and diagnostic tools as important pieces of the large systems world missing on PC servers.

AST and the SCO marked the event as the first time the SCO's MPX 2.0, a multiprocessing version of Unix, had run on fully symmetric hardware. AST's system was designed so that processing tasks are distributed evenly among the available CPUs. True symmetric multiprocessing (SMP) would give a 100% boost in performance for each new processor. AST acknowledged that this performance is not achieved by AST's Manhattan SMP superserver.

The Manhattan SMP supports up to four Intel Corp. 50-MHz I486DX microprocessors and 32G bytes of storage. Base price with one processor is $26,995. AST said it has 12 beta-test machines, mostly at software vendors, and will soon start a corporate beta-test program.

Michael Kreiger, AST's director of advanced systems marketing, said AST will focus on signing up value-added resellers for Manhattan, which he said will ship in December. AST hopes to find 100 resellers for Manhattan and expects to sell "well over" 1,000 units in the first year.

Intel gets involved

Among several recent moves for the multiprocessing market was one from Intel, which last week confirmed that it is developing an Advanced Programmable Interrupt Controller architecture that will replace its current 8259A chip. Commands from the microprocessor to the rest of the PC get transferred through the interrupt controller.

Intel said changes in software and the development of more powerful chips is driving the architecture's development.

For end users in a stand-alone environment based on high-level processors such as the upcoming P5, performance gains will be anywhere from 5% on up, according to Jag Bolaria, an Intel engineer. Far more significant gains will be made in a multiprocessing, multitasking environment, where every switched task means that the interrupt controller gets called into play.

"With the new operating systems, like OS/2, Windows NT and Unix, they're all multitasking, and there really is no interrupt controller for that," Bolaria said.

He said Intel will release a version of a new Advanced Programmable Interrupt Controller next month, but he said it could change several times before it appears in products.

Intecom ties LAN to phone switch

BY JOANIE M. WEXLER
CW STAFF

ALLEN, Texas — Former Wang Laboratories, Inc. subsidiary Intecom, Inc. has taken an innovative approach to survival in a long-saturated private branch exchange (PBX) market.

The vendor said it will announce today that it has integrated 10Base-T local-area networking, a Fiber Distributed Data Interface (FDDI) backbone, bridging, wiring hub capabilities and wide-area networking interfaces into its Integrated Business Exchange (IBX) PBX.

The goal is to turn the IBX telephone switch into an enterprise multimedia network backbone that can be managed collectively, said David C. Tucker, director of marketing. The enterprise voice/data/video network-in-a-box is managed by the Hewlett-Packard Co. OpenView product because "HP was the only vendor interested in ultimately managing traffic other than data," Tucker explained.

Intecom's InteLAN offering integrates a logical 100M bit/sec. FDDI backbone within the IBX and internally bridges the 10Base-T networks across it to boost performance, Tucker explained. The cost per port is $250, plus about another $100 per workstation for a 10Base-T adapter card. Users, then, pay a premium of approximately $250 a port for 10Base-T networking with the added FDDI backbone functionality.

"CA-Realia COBOL Achieved The Highest Overall Rating"

Computerworld Buyer's Scorecard March 25, 1991

- ✔ Quality Of Technical Support
- ✔ Clean Code Production
- ✔ Ability To Increase Programmer Productivity
- ✔ Responsiveness Of Vendor Service
- ✔ Speed
- ✔ Overall Ease Of Use
- ✔ Training Required To Use Product
- ✔ Costs vs Benefits Provided By Product
- ✔ Ease Of Installation

We won.

That's what the most recent Computerworld Buyer's Scorecard of COBOL software said: CA-Realia COBOL is the highest-rated COBOL solution available.

Not Micro Focus. Or RM/COBOL. In fact, no other COBOL software could match CA-Realia COBOL's overall ease of use and technical superiority in compiling and debugging large system applications.

But you be the judge.

Call 1-800-CALL CAI today for more information on CA-Realia COBOL and the scorecard article.

With COBOL software this good, you win.

COMPUTER ASSOCIATES
Software superior by design.

CA-Realia COBOL CA-Realia CICS CA-Realia IMS CA-Realia DL/1 CA-Realia 370

Computer Associates International Inc. One Computer Associates Plaza Islandia, NY 11788-7000. All product names referenced herein are trademarks of their respective companies. 1991 CW Publishing Inc. Framingham, MA 01701

"An Architecture Of Possibilities Is Rooted In The Constant Of Change."

Richard Rogers,
Architect

The architects of software confront the same challenge as the architects of steel and glass: the constant of change.

Changes in business. And changes in technology.

There is one software architecture designed to deal with the constant of change: Sybase.

Sybase gives you the flexibility to create applications that integrate data sources of every kind—databases, multimedia, real-time sources, even mainframe applications—into a high performance client/server computing environment. The flexibility to modify those applications quickly as your business and computing environment changes. And the flexibility to run those applications on the hardware of your choice: PCs, workstations, minicomputers, mainframes.

This flexibility makes Sybase the most effective technology for building today's on-line enterprise. And gives you a unique ability to adapt to the needs of tomorrow.

Sybase. Client/server architecture for the on-line enterprise.

To find out more about our database, application development and connectivity products, and our multi-vendor consulting services, call 1-800-8-SYBASE.

© 1992 Sybase Inc.

The Lloyds Building, London. Designed by Richard Rogers. A loose, changeable framework, constructed with components which can easily be adopted, removed, or reconfigured as business needs change.

SYBASE

CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

IBM, Sears blend networking strengths

Joint outsourcing venture Advantis could cement IBM's position in the domestic services market

BY ELISABETH HORWITT
and NELL MARGOLIS
CW STAFF

SCHAUMBURG, Ill. — Can two less-than-successful value-added network players combine to make one dynamite network outsourcing company? That is what IBM is shooting for with its announcement last week of an agreement to align its network service with that of Sears, Roebuck and Co.

IBM Information Network (IIN) and Sears Technology Services, Inc. will combine to offer everything from network transport and electronic-mail services to designing, implementing and operating a customer's network, the companies said. Analysts said the market for such services is expected to reach $7 billion by 1994.

Called Advantis, the venture's two initial customers, IBM and Sears, are expected to make up 53% of its estimated $1 billion in first-year revenue, according to Boston-based research firm The Yankee Group.

Sears' nationwide network and 1,500-person staff of networking experts will position IBM "much more strongly" both as a value-added network that connects companies to their suppliers and customers and as an outsourcer that can meld a customer's network operations into its own, said John Rogers, European director at consulting firm Ledgeway Services. The question is whether the venture can attain unique advantages over such network outsourcing giants as Electronic Data Systems Corp. and AT&T, he added.

To be successful, Advantis also needs to extend its Systems Network Architecture (SNA) and its outsourcing outside the U.S., analysts said.

Sears, meanwhile, gets to gracefully exit the commercial network services business. By contributing Sears Communications Co., the retailer receives an estimated 20% to 25% stake in the joint venture.

Best of both worlds

IIN users seemed to have no doubts about the advantages of working with Advantis.

Blue Cross/Blue Shield, which evaluated Sears Communications before choosing IIN as its network provider last year, "hopes to get the best of both companies' combined strengths" from the merger, said Robert Schultz, a senior consultant at the company. Blue Cross also hopes to take advantage of special Sears services such as "data transfer products and maybe some different twists for E-mail," Schultz said.

"This is tremendously exciting to us," added Jerry Brager, chief executive officer at Laurence Harbor, N.J.-based Physician's Computer Network, Inc. His firm, which is 25% owned by IBM and uses IIN to route information among approximately 60,000 doctors' offices that subscribe to its medical networking services, will become an Advantis customer automatically.

Both users said they hoped to see some lower pricing from Advantis as a result of the economies of scale offered by combining the Sears and IBM networks. However, The Yankee Group suggested that both Sears and IBM have already taken advantage of any potential economies of scale in their networks. Syd Heaton, Advantis chairman and CEO, refused to "speculate on price changes."

The following is a rundown of the venture's strengths and weaknesses:

• **Service offerings**. The true blueness of Sears' network should make it a snap to integrate with IBM's SNA-centric information network.

On the other hand, there is such a thing as being too monolithic: Users and analysts expressed concern that Advantis' solid SNA-orientation may make it harder for the network service to meet its customers' burgeoning demand for high-speed, multiprotocol routing applications such as local-area network interconnection.

IBM is in the process of bringing into IIN — and thus into Advantis — certain key technologies it now uses internally that "lend themselves nicely to commercial offerings," Heaton said. Potential upcoming Advantis services include Integrated Services Digital Network, frame relay, multimedia and digital broadcast service, he added.

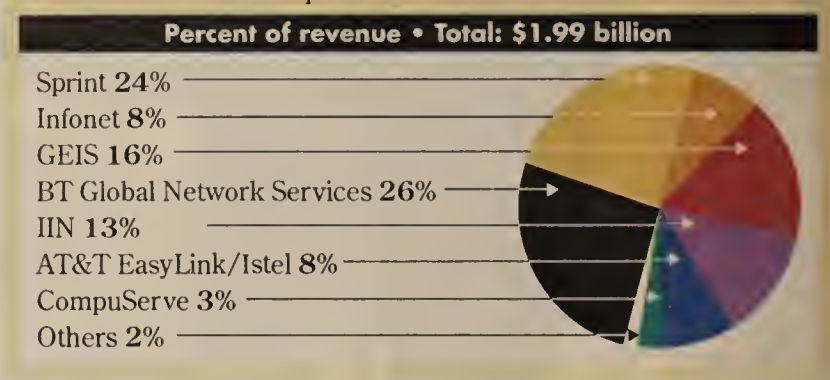
• **Covering the map.** The two firms' network infrastructures are complementary: Sears' network, originally built to reach out to Sears' consumers, provides inexpensive local phone access from some 20,000 sites nationwide. IIN has local nodes in fewer cities but provides the greater throughput for customer sites with high-volume traffic.

A major Advantis disadvantage is its focus on the U.S. market. While Advantis users will be able to communicate with overseas users via ties to IIN's overseas units, those groups are making their own decisions about whether to expand their network outsourcing offerings, Heaton said. This leaves IBM without a cohesive global network outsourcing strategy, while BT, Sprint Corp. and Infonet have all been aggressively expanding their global offerings.

Worse, while IIN grabbed 13.1% of the international value-added network market last year, most of its business was here. Overseas customers still perceive the service as overpriced, The Yankee Group said.

Bridge building

IBM hopes its partnership with Sears will allow it to leapfrog value-added network competitors



Source: The Yankee Group

CW Chart: Michael Siggins

Let's make a $1B deal

The IBM/Sears Advantis joint venture "will be a $1 billion company — and a profitable one" from Day 1, executives at both companies declared. Here's what else it will be:

• An amalgam of IBM's Networking Systems Services Division, including the IIN, internal telecommunications and Integrated Systems Solution Corp. (ISSC) network support as well as Sears' information systems subsidiary, Sears Technology Services (STS).

• Jointly owned by ISSC and Sears, with ISSC holding a majority stake.

• Outsourcing vendor to Sears, including Sears business groups Coldwell Banker Real Estate Group, Inc.; Allstate Insurance Co.; and Dean Witter Financial Services Group, Inc.

• Network service provider to all current IIN and STS customers, with consequent access from some 550 cities in 92 countries.

• Staffed by some 3,000 employees: all of STS' current 1,500 plus some 1,500 more from the various IBM networking units.

• Target markets will include ISSC's stated target industry niches, CEO Dennie M. Welsh said. These include retail, state and local government, health care, insurance, manufacturing and transportation.

NELL MARGOLIS

CA to port management software to NetWare

BY MICHELE DOSTERT
CW STAFF

NEW ORLEANS — Companies turning to distributed computing could eventually gain the same centralized control and automaton of enterprise work procedures long afforded by the glass house if software under development at Computer Associates International, Inc. and Novell, Inc. comes to fruition.

Under a deal disclosed at CA's Systems Software Conference (SSC) here last week, CA will port its CA-Unicenter systems management software to NetWare servers. CA-Unicenter for NetWare will enable users to manage data, resources and business procedures across computing platforms distributed via networks.

From a central CA-Unicenter for NetWare console, for instance, an information systems manager could program, via CA/Novell's OS/2 Presentation Manager interface, specific populations of servers across the network to back themselves up at a given time.

A year away

CA-Unicenter for NetWare will be available in 12 to 15 months for Novell's NetWare v3.11, according to Kurt Seibert, vice president of strategic business alliances at CA. He said a version for the NetWare 4.0 operating system will appear "almost simultaneously."

Mary Welch, vice president of corporate planning at CA, said the companies are developing pricing models for a distributed computing environment based on models CA created with Hewlett-Packard Co. for CA-Unicenter for Unix.

Analysts said CA has a ready-made customer base for the Unicenter for NetWare product.

"CA is really tied into its customers. It sees them moving from mainframes to LANs, and it's determined to move with them," said Stan Schatt, a senior industry analyst for local-area networks at Computer Intelligence/Infocorp, a Santa Clara, Calif.-based research firm. Schatt said that more than a third of the applications being developed in sites with mainframes are being developed for the LAN platform.

SSC attendees with mixed NetWare and mainframe environments were enthusiastic about the software's potential.

"We're a Unicenter for MVS customer, so we think it's wonderful," said Phyllis Pallacios, SSC chairman and a computer support specialist at Peoples Natural Gas in Omaha. Peoples is in the early stages of adding NetWare to its IBM mainframe and Application System/400 environments.

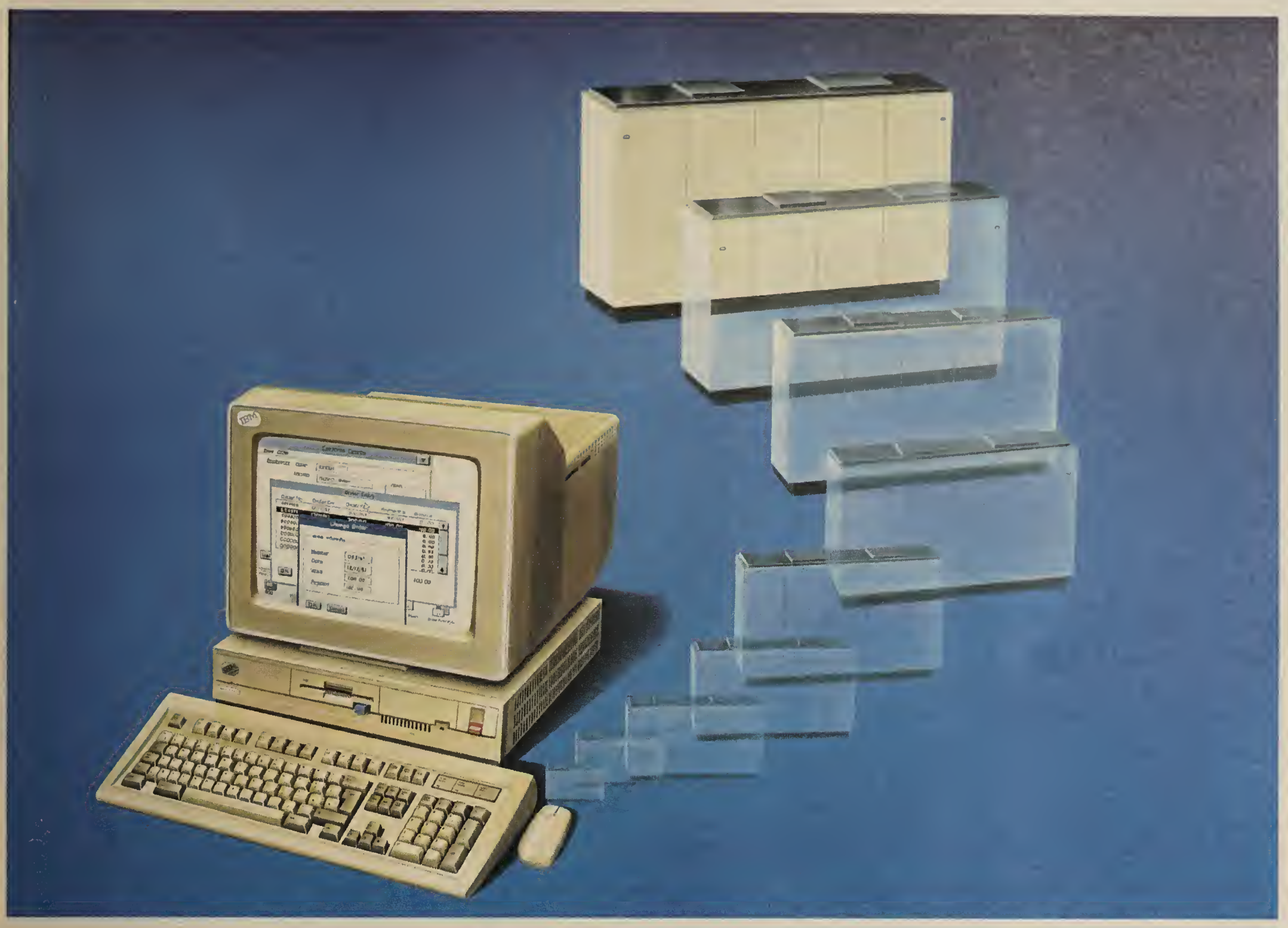
Regaining control

M. Nicholas Lovelace, IS review officer at Connecticut Mutual Alliance in Hartford, Conn., said his firm currently uses a separate LAN administrator for each of its 12 Novell NetWare v3.11 LANs, which serve 500 workstation users nationwide.

"Our main interest right now is to centralize control [of the LANs], and what CA is doing now [with Unicenter for NetWare] will allow us to do that," Lovelace said.

Officials at both vendor companies said there would be little overlap between CA-Unicenter for NetWare and Novell's own NetWare Management System (NMS). They explained that the CA/Novell product manages the business processes and data that run over the hardware/software network infrastructure, which is kept up and running by network management systems such as Novell's NMS.

Senior editor Joanie M. Wexler and correspondent Thomas Hoffman contributed to this story.



Downsizing or Rightsizing COBOL Applications? Micro Focus is the only answer.

With Micro Focus your programmers can start work on your downsizing and rightsizing projects right away. We provide the tools your programmers readily understand, so they can use them today. Tools like:

- **Micro Focus COBOL™,** available on the PC with DOS, OS/2® and Windows™, as well as all leading UNIX® based machines, so your COBOL applications can go right where you need them.
- **CCI™** (Common Communications Interface) gives your developers a COBOL oriented protocol independent API and will shield them from the intricacies of communications programming.
- **Fileshare™** will give you full mainframe level data integrity, in standalone and networking applications, and is optimized as a Novell® NLM for best possible performance.
- **CICS™ OS/2 Option** - download your mainframe CICS applications today. Redistribute processing load with minimal effort.
- **IMS™ Production System** - deliver mainframe compatible, industrial-strength IMS applications on PC Networks.
- **370 Assembler** - take your mainframe assembler programs and execute them on the workstation.

To create graphical user interfaces for these applications use **Dialog System™**. Let your developers get up to speed with maximum productivity and portability.

Start realizing the benefits of downsizing and rightsizing by giving your programmers Micro Focus tools today. Call **800-872-6265** and discover 'A Better Way of Programming™'.

INTERNATIONAL ALLIANCE IBM AD/Cycle

MICRO FOCUS

Micro Focus Inc., 2465 East Bayshore Road, Palo Alto, CA 94303. Tel. (415) 856 4161

Micro Focus is a registered trademark and Micro Focus COBOL, Fileshare, CCI, Dialog System, and 'A Better Way of Programming' are trademarks of Micro Focus. UNIX is a registered trademark of UNIX System Laboratories, Inc. Windows is a trademark of Microsoft Corporation. OS/2 is a registered trademark and AD/Cycle, Fileshare, IMS and CICS are trademarks of International Business Machines Corporation. Novell is a registered trademark of Novell, Inc.

GSA Contract Number GS00K90AGS5251-PS02

Wrestling with dinosaur image

Claudio Edinger

Programmer Welch *took an AS/400 course after she was laid off in 1991 — and six months later, she had a new job*

Continued from page 1

expenses," Beaumont said.

It was a steep fall for someone who had managed million-dollar budgets as IS manager at Codex Corp. and had then become an IS consultant before being laid off in 1990. By his reckoning, Beaumont failed to get an IS job because of his mainframe orientation, his lack of experience in certain industries and the perception that he was overqualified.

One more reason was fierce competition. IS layoffs caused by the consolidation of data centers, corporate mergers and bankruptcies have all conspired to produce a surplus of mainframe jockeys in the U.S. When an employer does post a mainframe job opening, the company becomes inundated with 300 to 500 resumes and can be extremely selective, IS personnel experts said (see story at right).

"This is the worst stretch of unemployment in the data processing field I've seen in 10 years," said Roger O'Connor, an expert at Edward Perlin Associates, Inc., a consultancy in New York.

MIS Network Associates, an organization dedicated to helping out-of-work IS professionals in the New York/New Jersey area find jobs, has 330 people on its roster and adds about 10 a week, according to meeting coordinator John Sampson. "I'm betting that 80% to 90% have almost exclusively mainframe experience," he said.

The troubles in the mainframe job market will only worsen as companies pursue technology downsizing strategies. Peter Burris, an analyst at International Data Corp. in Framingham, Mass., said that more than 40% of the large IBM mainframe shops reported that they are pursuing some form of downsizing, either moving current mainframe programs to smaller, distributed systems or focusing new applications development on those smaller systems.

No one argues that mainframe jobs will completely vanish anytime soon, given that there are roughly 24,000 mainframe computers in the U.S. that need care and feeding for the foreseeable future [CW, Aug. 17].

"There's still a substantial body of work for the mainframe folks, but it's just not expanding. All of the growth is in the PC and midrange areas," said Carol L. Covin, author of IS job-hunting guides for the Washington, D.C., and New England areas.

Once senior mainframe experts are laid off, it is especially hard for them to get reemployed because they expect relatively high salaries and have trouble changing industries. "It's hard to make the switch from defense to health or from banking to energy," Covin said.

The ones who are successful getting reemployed are those with experience in relational database management systems or computer-aided software engineering, said Shirley Bascom, manager at the North Canton, Ohio, office of Compusearch, a division of Management Recruiters International, Inc.

Dinosaur skills

But programmers with skills limited to Cobol and CICS — in high demand just a few years ago — are in big trouble.

"These guys with just plain Cobol/CICS [skills] are dead in the water unless they've got exposure to a database such as DB2 or expertise in a certain software package. Cobol/CICS is just not enough anymore," said Jack Ferrara, a principal and IS recruiting specialist at The Career Doctors, Inc. in Bethlehem, Pa.

"The mainframe guys are becoming dinosaurs. We have not placed one of these guys in a year," Ferrara said.

One of those dinosaurs is 32-year-old David Williamson, who was a Cobol/CICS programmer at Sherwin-Williams Co. in Cleveland. He has been unemployed since June and is considering changing careers. "I fear that my skills are getting somewhat archaic, outdated," he said.

IS career experts said people in Williamson's position should get some training in the hot technologies of the 1990s, including personal computer networks and midrange systems such as the IBM Application System/400, as well as C and Unix. That may mean two steps backward in terms of pay, but it will eventually produce 10 steps forward in terms of career, Ferrara said.

Susan Welch, 34, a programmer of large Honeywell, Inc. systems, did just that after she was laid off in March 1991. She took a course in AS/400 programming and six months later landed an entry-level AS/400 job at Penncor Services, Inc., a communications firm in Palmerton, Pa.

However, getting the right training is not always easy because "the schools aren't keeping up," Bascom said. For example, she said, "the two-year technical colleges are still turning out RPG II and Cobol people, who are not in demand. They need to produce RPG III people for the AS/400, and they need to produce C people for the new open systems environment."

Of course, savvy mainframe professionals are adding PC local-area network or midrange skills while they are employed to make themselves more attractive to both current and future employers.

Up by his bootstraps

Fred Corey, who lives in East Hartford, Conn., is one mainframe veteran who picked up PC skills on his own — and that saved his career when he was laid off from the Pratt & Whitney division of United Technologies Corp. in 1989.

After nearly a year without work, Corey said, he decided to try the training field and landed a job at Cigna Corp.'s IS training department in Hartford, where he teaches PC skills to Cigna employees, including mainframe programmers.

Corey gives this career advice: "Try to jump onto a rising star — whatever technology is going to be in demand 12 months down the road."

But for former mainframer Beaumont, that chance will never come. He died unexpectedly from a seizure Aug. 8.

By the numbers

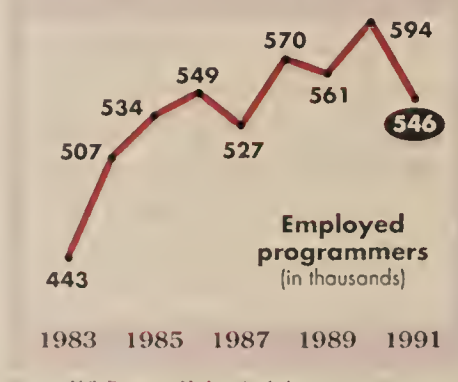
Although there are no hard statistics on how many mainframe-oriented IS professionals have lost their jobs, circumstantial evidence suggests that the number is in the tens of thousands.

Economic pressures in banking, defense and other industries have closed data centers right and left and put many IS professionals out of work during the last three years [CW, June 1]. For example:

- First Interstate Bancorp in Los Angeles cut its IS staff by 68%, from 2,128 to 680, as it consolidated 11 data centers into two.
- Fleet Financial Group, Inc. in Providence, R.I., has cut its back-office staff by more than 3,000 since 1988 as it eliminated redundant data centers inherited from acquisitions and mergers.
- Pan Am Corp. in New York had an IS staff of 500 before it went bankrupt and ceased operations last December.

Downward spiral

The number of employed programmers in the U.S. dropped sharply in 1991



Source: U.S. Bureau of Labor Statistics

According to the U.S. Bureau of Labor Statistics, the number of employed computer programmers fell by 48,000 last year because of the economic recession and corporate restructuring. It is not known how many of these programmers were in vendor or user organizations.

Another clue is that the number of IBM and plug-compatible mainframes in the U.S. has declined 12% since 1989, from 27,274 to 23,920, according to Computer Intelligence estimates.

During the same period, the number of data centers decreased 9%, from 16,631 to 15,114, from consolidations.

MITCH BETTS

Older staff: First to go?

Every Tuesday night at the Knights of Columbus Hall in Ridgewood, N.J., a group of about 85 unemployed IS professionals meets to talk about which companies are hiring. They also discuss discrimination.

"We talk about the kind of people that get hired, and they're definitely not people over 40," said John Sampson, meeting coordinator for the group, known as MIS Network Associates.

Older employees — those with mostly mainframe experience and higher salaries — tend to be the first laid off and the last rehired, he said. "Discrimination based on age is pervasive," he said.

But other observers disagreed. One IS career expert said there may be isolated pockets of age discrimination in the IS field, but it is not widespread because talent is what really matters to employers.

Nevertheless, the IS field is beginning to see its first lawsuits alleging age discrimination. Earlier this year, 11 former IS employees of Eastman Kodak Co. claimed age discrimination in a legal dispute over their transfer to an outsourcing vendor.

In 1989, 24 laid-off workers in the Hartford, Conn., area — including several IS professionals — filed suit against Pratt & Whitney, alleging age discrimination.

"I felt very strongly there was age discrimination there, just looking at the cross-section of people who were let go," said 47-year-old Fred Corey, who spent 23 years in IS at Pratt & Whitney and is a plaintiff in the suit.

The company said its layoffs were conducted in a fair and humane manner.

THE BEST WAY TO UNVEIL OUR NEWEST DISK ARRAY IS TO COVER IT.

As far as performance is concerned, our new 7637 Model 20 DASD has you covered—with the latest 3.5" disk technology supported by the very first 3-year warranty in the industry. Combine that with our superior engineering and architecture, and you have the best 9336-compatible DASD on the market today.

IPL 7637 Model 20

- 3-year warranty
- Advanced 3.5" HDA technology
- 40% less rack space
- Dynamic sparing
- 128 MB cache memory
- No maintenance cost for 3 years

We begin with the most advanced 3.5," 1 GB disk drives ever made. With features that include a super-fast 9.8 ms seek time, read-ahead cache, magnetoresistive head Nanoslider and 256KB segmented data buffer. Add to that, options like controller cache memory for faster throughput and dynamic sparing for maximum system uptime—both market firsts from IPL. All at a lower cost per MB than IBM's 9336 Model 20. And all fully compatible with IBM architecture and diagnostics.

It all adds up to unmatched reliability and the best buy you can make in AS/400 DASD storage. Guaranteed. To learn more, call IPL at 1-800-338-8475, 617-890-6620 in MA. In Canada call 800-565-5606. In Europe call 011-32-2725.41.58.

ipl SYSTEMS

The Smart Choice for AS/400 Storage.

IBM and AS/400 are trademarks of International Business Machines Corporation

NEWS SHORTS

Wang shuffles execs

Attrition and restructuring at bankrupt Wang Laboratories, Inc. has already begun. Ken Olisa, a 12-year Wang veteran, resigned late last week as Wang's head of Europe, Africa and Middle East operations but will stay on as an outside consultant. Joe Tucci, executive vice president of operations, will now oversee those offices from headquarters in Lowell, Mass.

. . . . . .

Sematech to lose federal funds

Federal funding for the Sematech chip consortium will be phased out during the next five years, according to a report from the U.S. General Accounting Office. The announcement was made even though Sematech — with $100 million a year from the U.S. Department of Defense and a like amount from member companies — is on schedule to demonstrate parity with the Japanese in the capability of semiconductor manufacturing equipment by year's end, according to the General Accounting Office.

. . . . . .

High-performance advances

The White House Office of Science and Technology Policy announced last week both the creation of the National Coordination Office for High Performance Computing and Communications and the appointment of Dr. Donald Lindberg as its director. Lindberg will remain director of the National Library of Medicine at the National Institutes of Health. The new office is to coordinate the administration's multiagency effort to build a 1G bit/sec. National Research and Education Network and TFLOPS/sec. supercomputers and to coordinate that effort with Congress and the public, the White House said.

. . . . . .

NET adds frame relay

Network Equipment Technologies, Inc. last week added frame relay networking capabilities to its T1 and statistical multiplexers. Users will reportedly be able to initiate frame relay transmission at the desktop, ship it over low-speed links to the corporate backbone, then leverage high-speed T1 and T3 (45M bit/sec.) links to ship the data to user destinations.

. . . . . .

Bell Atlantic offers net integration

Bell Atlantic Corp. last week entered the network integration market with the formation of Bell Atlantic Network Integration. The business unit will provide planning and needs analysis, product integration and network implementation services through its existing network of 338 field service offices.

. . . . . .

CA extends scheduler

In addition to its alliance with Novell, Inc. (see story page 10), Computer Associates International, Inc. last week unveiled plans for several new systems-related products. CA-7 for AS/400, an automated scheduling system for IBM's Application System/400 minicomputers, extends production control automation across multiplatform environments, including IBM mainframes. It costs $15,000. CA-RSVP is a $6,000 storage reporting facility for IBM MVS operating systems that utilizes VTOC and several system catalogs. CA-Examine/PC is a personal computer-based auditing tool for indentifying an organization's PC hardware and software inventory. Volume pricing varies from $8.50 to $22 with a minimum of 250 licensed PCs.

. . . . . .

Short takes

As expected, **Banyan Systems, Inc.** announced that it plans to offer Open Systems Interconnect (OSI) support as a series of software options for Vines for The Santa Cruz Operation's SCO Unix [CW, Aug. 17]. . . . The **U.S. Department of Transportation** has extended its service contract with **Unisys Corp.** for an additional five years. The $201 million pact calls for Unisys to provide information services, operations research and engineering support. . . . Robert Fabbio, founder and former president of **Tivoli Systems, Inc.**, has left the company to develop and market computing services and software to help corporations make the migration to open systems.

HP to revamp customer service

Answers small-user complaints that support suffered after shift to VARs

BY MARK HALPER
CW STAFF

NEW ORLEANS — Some small to midsize Hewlett-Packard Co. minicomputer users are up in arms, saying the quality of support has declined since HP switched to a value-added reseller (VAR)-oriented sales strategy last year.

This week, HP is expected to heed their call by disclosing a shift in its sales and support program at the Interex users group meeting here.

At issue is a change implemented by HP last December in which the vendor began funnelling sales of less than $100,000 through resellers rather than the company's direct-sales force.

Ironically, HP said the shift was intended to boost support to what HP calls its smaller "B" and "C" accounts. But, as HP's chief of sales for the Americas, Manuel Diaz, conceded last week, the best-laid plans of mice, men and computer vendors go oft astray.

"This kind of transition takes longer than you think it will," Diaz said.

Diaz is expected to announce at the HP user conference a plan to form what he calls an integrated sales team that will combine resources from HP's direct-sales force, telephone sales support staff and VARs.

Diaz said HP will have the team in place by Nov. 1 in an effort to "remove some of the problems" that the smaller accounts have been experiencing.

One of the consequences of the December change was that users who were accustomed to visits by sales representatives were moved over to VAR and telephone support. The loss of face-to-face contact with their sales representatives left some users feeling unsupported.

"A lot of customers used to having a salesperson calling on them regularly are having to deal with a telemarketing person and are not very happy about that," said Jane Copeland, president of Austin, Texas-based software developer Holland House, Inc. and head of the advocacy committee for Interex.

Diaz said he would provide more details at the Interex conference of how the integrated sales team will work to address users' support needs.

Meanwhile, HP's support organization, called Worldwide Customer Support Operations, last week announced new programs that it said will enhance support across the entire user spectrum. The new program is intended to simplify service choices and to increase the number of personalized service options, the company said.

The program gives users several support options, including an assigned support team and HP response center. It also offers users specialized support in areas including multivendor networks, software and on-site licenses.

The program is an extension of the HP Premier Account Support program launched last May for users of the Corporate Business System, a high-end minicomputer that HP introduced at that time.

Hewlett-Packard aiming stations at office desktops

CONTINUED FROM PAGE 1

service and support count just as heavily.

Today, with hardware prices dropping, applications multiplying and ease-of-use features proliferating, HP and other workstation vendors are increasingly hopeful about cracking the PC lock on commercial desktops.

The changing HP workstation strategy includes:

• Targeting new applications in specific markets such as telecommunications, retail, financial services and customer service, rather than wasting efforts trying to dislodge Sun's installed base. Already counted among HP's telecommunications customers are GTE Telephone Operations, US West, BellSouth Corp. and Northern Telecom, Inc.

• Training the sales force to push the Series 700 workstations to two overlooked customer bases: sites with HP 9000 Series 800 servers and HP LaserJet printers.

• Phasing out, during the next several months, its high-end servers in the Series 700 line. This will eliminate a confusing overlap with the low-end Series 800 servers.

• Increasing investment in third-party software suppliers, ease-of-use software and Unix system administration tools.

• Producing low-cost, high-volume workstations that surpass the power of Intel Corp. high-end personal computers and sell in the $3,500 to $5,000 range.

"HP is doing well on commercial desktops. I would rate them second to Sun, which is far and away the leader," said Thomas Kucharvy, president of Summit Strategies, Inc. in Boston.

HP's Eichhorn: *Seeing a lot more bids and more long-term projects*

In the battle against Sun, analysts and users said HP's advantages are its leading position in Unix multiuser systems with the Series 800 and a thriving X Window System terminal business that is now 20% of its desktop volume.

The downside for all the workstation vendors is the minuscule market share — estimated at less than 1% — for Unix-based desktops in the PC-dominated commercial world.

Solid figures are hard to come by, but industry analysts predict that growth rates in the business/professional workstation market could exceed 50% annually during the next few years.

"We've had a very good experience with HP," said John Reitsma, manager of treasury technologies at Royal Bank of Canada's trading room in Toronto. Still predominantly an IBM mainframe shop, the bank has a niche of 125 HP Series 300 and 400 workstations in Toronto.

"There were times earlier on when you could see they were an engineering company making a transition," Reitsma said. "But today we hear from a lot of software vendors who are using the 700s as a development platform."

Several users said that while the Series 700's leading price/performance now gets HP in the door, it is often other factors such as hardware reliability and service and support that tip the scales in its favor.

At Citibank NA's Treasury Risk Management Division in New York, for example, HP won a new account based on its well-reputed support capabilities and its application performance.

"On Wall Street in general, HP never had a real presence. I think that's starting to change a bit," said John Martino, vice president of software development at the Citibank division.

information management gets harder every day.

Today, application developers face great challenges and great opportunities.

Mergers and acquisitions require system integration. Technology advances like client/server computing offer new processing options. Rightsizing pressures give rise to information architecture redesign. While the pressure to maintain and enhance existing systems never lets up. As the leader in integrated CASE, KnowledgeWare has been an active partner with more than 4,000 companies since the introduction of our first CASE tools. We have seen the challenges firsthand. Now we are using that experience to offer a full spectrum of solutions. Our portfolio includes:

- The premier I-CASE tool set for new application development.
- The industry's strongest AD/Cycle™ partnership with IBM.
- Best-of-breed component tools for specific development activities.
- Professional services targeted at implementation and knowledge transfer.
- Alliances with the software, hardware and service providers who are most important to our customers.

Information management has never been tougher. But it has also never offered so many opportunities for success. Call us at 1-800-338-4130 for more information about how KnowledgeWare can be your source for enterprise information management solutions.

IBM INTERNATIONAL ALLIANCE AD/Cycle™

KnowledgeWare®

AD/Cycle is a trademark and IBM is a registered trademark of the International Business Machines Corporation.

Users doubt a Wang comeback

Bankruptcy blues

Dissecting Wang's predicament

Assets:	$1 billion
Debt:	$1.3 billion
Layoffs:	5,000 worldwide, with 1,500 at headquarters
Recent stock price:	38¢
Timetable:	Hearing scheduled for today to map out spending allowances for daily operations

Swimming in red ink

Wang's Chapter 11 filing makes it the largest computer company to claim bankruptcy

Revenue and asset figures at time of filing

	Wang Laboratories, Inc.	Storage Technology Corp.	Memorex Telex Corp.	Alliant Computer Systems	Floating Point Systems, Inc.
Filing date	8/18/92	10/31/84	1/6/92	5/26/92	10/7/91
Revenue	$1,900M	$887M	$714M	$72M	$47M
Total assets	$1,418M	$1,266M	$1,643M	$62M	$62M
Status	Pending	Emerged 1987	Emerged six weeks later	Pending	Pending*

*The company is largely liquidated (case still in progress)

Source: The Bankruptcy DataSource

CW Chart: Michael Siggins

Continued from page 1

terminals and personal computers for a series of local-area networks.

For users such as Chris Drumm, MIS director at a large Atlanta law firm, Wang's biggest mistake was overhyping Office 2000 — an 18-month-old, next-generation office automation strategy — before it was ready to flesh out the plan with products.

For example, an IBM RISC System/6000 version of Pace, Wang's database/software development system, still has not shipped, although the company has been promising it for several months. The product is due out before the end of 1992, according to Miller.

Still, Drumm said he is disillusioned. "They have good ideas, but they're unresponsive to customer needs. They pay us lip service," he said.

Miller said he is "convinced" that Office 2000 is the right path. Office 2000 is a blueprint for redesigning and streamlining office work flow with imaging technology. The plan allows users to keep VS machines while incorporating Wang Integrated Imaging System and RS/6000 boxes into administrative offices.

The impending court-monitored restructuring will let Wang focus development resources "to make sure these products are brought to market over the next six months," Miller said.

Challenge: Keeping customers

Keeping its estimated installed base of 19,000 sites alive in the process is a twofold prospect: Wang must assuage fears about continued support of the VS line and provide a well-articulated path away from the VS to RS/6000 boxes, which Wang is reselling, users agreed.

While developers scramble to deliver on Unix promises, VS users should see no disruption in service or support of proprietary hardware, even while Wang lays off 38% of its 13,000-member work force, Miller promised.

Even so, many longtime VS shops are clearly exploring alternatives. Come September, Ted Hutton, systems manager for the Port of Seattle, will work with an outside consultant to lay down a future hardware plan.

"We don't have the budget to make a wholesale shift, but we'll go, sure and steady," he said, adding that LANs and as-yet undetermined Unix machines will replace the port's 10 VS models.

American Express, whose migration from Wang minis to PC LANs is nearly complete, expects to save two-thirds on maintenance costs with its new configuration, according to Joe Caruso, director of corporate systems and technology. "We'll see complete payback on our onetime charges within one year," Caruso estimated.

Horror stories

Wang and its creditors do not want to hear such stories. Without maintenance fees garnered from existing users, Wang has precious little income to live on during its restructuring.

"In the 48 hours since Wang filed, our phones have been going crazy," said Michelle Gibson, vice president at ICA, Inc., an independent VS service provider in Atlanta. Gibson, a former Wang saleswoman, said she expects a "horrible attrition rate" of users who currently rely on Wang for VS support and will now turn to third parties.

Gibson estimated that Wang service brings in an average of $600 million annually and said she "wouldn't be surprised if [Wang] lost $100 million in maintenance contracts right off the bat, due to scared users."

It is unclear whether Wang will get a sorely needed $75 million cash infusion from IBM, related to the three-year, $100 million reseller deal the two companies signed in June 1991. IBM invested $25 million in Wang up front when it signed Wang on as an OEM for the RS/6000 and Application System/400 lines.

But both parties emphasized the deal's vague language last week. "There *could* be an additional investment of $75 million," Miller said.

"It wasn't guaranteed but [was] based on [Wang's] meeting a certain level of sales performance," an IBM spokesman explained. That performance assessment is scheduled for January 1993, he added.

Neither party would enumerate precise sales objectives, but Wang has so far fallen short, according to industry watchers.

Wang officials testified during a September 1991 antitrust case brought against Wang by five resellers that as of June 1992 — a year after signing the IBM deal — Wang had sold just 18 AS/400s and 80 RS/6000s. One reseller estimated that since Open/image was unveiled in June, Wang has booked another 300 or so RS/6000s. Wang would not confirm the figures.

'IBM took Wang'

Edson de Castro, former chairman of rival minicomputer maker Data General Corp., echoed the general sentiment that Wang made a mistake agreeing to sell proprietary IBM minicomputers. "IBM took Wang for its installed base, and now what? The decision was positively naive," de Castro said.

"I think that if they emerge from

A HARD LANDING FOR A HIGHFLIER

THE EARLY YEARS

1920 An Wang born in China on Feb. 7.

1945 Emigrates to America.

1949 An Wang applies for a patent for core memories. Years later, he sells patent to IBM for $400,000.

1951 Wang Laboratories incorporated in Boston on June 30. Its first product, core memories, sells for $4 apiece.

1959 Warner & Swasey, a Cleveland machine tool company, buys 25% of Wang for $50,000 in cash and a $100,000 loan.

1962 Wang Labs builds Linasec, a text justification machine, for Compugraphic in Cambridge, Mass.

Wang Labs revenue hits $427,000.

1965 Revenue jumps to $2.5 million.

First Wang product – a $6,500 logarithmic calculating instrument called LOCI – hits the market.

1966 Introduction of Model 300 calculator.

THE BUILDUP

WANG

1967 Wang goes public.

1967 Revenue climbs to $6.9 million.

1967 John Cunningham, future president of the company, joins Wang as a salesman in Chicago.

1969 Wang introduces the powerful and fast 700 calculator, which later becomes 70% of its business.

1971 Wang introduces the 1200, "a typewriter with a brain." Orders strong from the start, but printing problems turn boon to bust. About 80% of all 1200s are returned.

1972 Fred Wang joins company as programmer for a minicomputer that eventually becomes the VS.

1972 Company suffers first earnings decline; 40 people lose jobs.

1973 Wang begins delivery of the $8,000 easy-to-use Model 2200 word processor.

STEADY CLIMB

1974 Fred Wang becomes marketing specialist.

The 2200 accounts for 50% of Wang revenue, but Wang's debts leap $12 million to $29 million.

1975 In September, Wang staff begins work on easy-to-use, LAN-like word processing system (WPS).

$75.8 million in sales of word processing and minicomputer equipment.

1976 Another financial hiccup: Company is more than $50 million in debt, but revenue is only twice that.

1977 VS mini, modeled after the IBM 360, announced in October for commercial sites.

1978 Wang becomes largest worldwide supplier of CRT-based word processors. Company moves to Lowell, Mass.

Fred Wang becomes WPS marketing manager.

Wang employs 4,000. Revenue at $198 million.

1979 Introduction of Wang Integrated Information System, a combination of Wang WPS and VS.

Revenue, boosted by WPS sales, approximately $300 million.

DON'T SETTLE FOR SECOND.

Subscribe to COMPUTERWORLD, and be among the first to read about the hottest news in the information industry. Receive 39 issues for just $29.95*. Act Now!

First Name MI Last Name

Title Company

Address

City State Zip

Please answer questions to qualify for this rate.

1. BUSINESS/INDUSTRY (Circle one)

10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)

Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

Address Shown: ☐ Home ☐ Business

Basic Rate: $48 per year. *U.S. Only

Recycled Paper

COMPUTERWORLD

E2234-1

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-2144

Chapter 11, they'll be a wholly different company," said Henry Creal, an information systems analyst for the city of San Jose, Calif. The new Wang will be much smaller, he said, or it may be bought out by another vendor. "Either way, Wang won't be Wang," Creal said.

Miller agreed: "Our focus clearly has to be on software and services," which is a line company officials have been repeating since the debut of Office 2000 in March 1991.

"If anyone can emerge successfully, Rick Miller can," said Matt Gillman, president of the U.S. Society of Wang Users, citing the $575 million debt Miller erased in his three years at the helm.

To survive, Wang must get products out — and fast, emphasized Tom Wilmott, vice president at the Aberdeen Group in Boston. "Wang's words have to ring true from now on, not hollow," he said.

As for the product lines . . .

While Chairman Rick Miller told *Computerworld* last week that he has "no plans to sell any part of the business," users and analysts speculated that some product lines stand to fare better than others after Wang's pending restructuring. Here are the consensus predictions:

• **VS line.** Continued incremental upgrades, with no new high-end machine to improve on the top-level VS 12000, introduced earlier this year.

Meanwhile, both Wang and IBM continued the party line, saying that their 14-month-old reseller deal is "intact, with business as usual," as Miller put it. Wang will provide coexistence and migration products that let VS users move to IBM's RISC System/6000, Miller said, adding that Application System/400s are still available from Wang, too.

• **Pace, Open/Pace.** Wang demonstrated a Unix version of its database/application development system as early as September 1991 for The Santa Cruz Operation's SCO Unix. However, when Wang signed a reseller bargain with IBM in June 1991, the product was shelved, and Wang started work on Open/Pace for IBM's RS/6000.

That version has yet to see the light of market, but it is due before year's end. Selected users have seen the product, and they predict a November debut, probably during the annual meeting of the U.S. Society of Wang Users in Boston.

• **PC business.** Opinion is split. Some analysts said that considering Wang's "reasonable" success in the mass merchandising channel, the firm will keep the PC unit going.

According to more critical observers, Wang has no chance in the cutthroat, low-margin PC market, where economies of scale determine who makes money. Miller's take: "We will always offer the latest in high-quality PCs. But we're attempting to reduce overall investment in manufacturing, so we may be working more closely with others" to produce PCs.

• **Imaging.** As the cornerstone of Wang's Office 2000 work-flow automation scheme, imaging development and marketing are not likely to be touched. Imaging is one of the few hopes Wang has, said Tom Wilmott, vice president at the Aberdeen Group in Boston.

Wang, which introduced its imaging package for the RS/6000 last month, is at least two months ahead of FileNet Corp. in bringing out imaging for Unix, Wilmott said. "But if they don't have that product shipping in volume by mid-September as promised, they can just hang it up as a company," he warned.

• **SIMM.** Wang spent 10 months in court fighting several Japanese manufacturers for patent infringement on single in-line memory modules (SIMM). Wang won the case in August 1991 and is entitled to royalties from companies such as NEC Corp. and Toshiba Corp. on products they sold containing SIMM technology.

KIM S. NASH

PLATEAU

1980

Fred Wang becomes head of R&D.

Revenue nearly $400 million.

1982

Revenue approximately $790 million.

PC revolution becomes threat to main line products: 2200 and WPS.

1983
John Cunningham becomes Wang president.

1983

Fred Wang announces Wang Office, a group of nonproprietary products that encompass all major office functions. Product finally appears two years later.

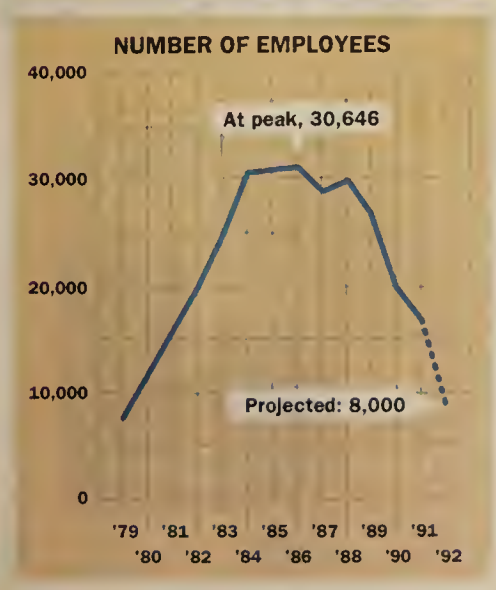
1984

Wang Office Assistant, a $2,400 stand-alone word processor, debuts in October, but its limited WP capabilities are overshadowed by PCs.

Company hits $2.2 billion in revenue but loses more than $30 million.

1985

In January, An Wang tells Cunningham he wants to make Fred Wang president. Cunningham quits.



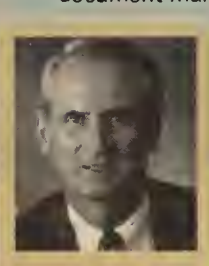
BUST

1986
36-year-old Fred Wang becomes president in November.

1987
Wang enters imaging market.

Wang posts $70.7 million net loss. Lays off 1,000.

1988
Wang unveils Freestyle – a document mark-up application.



1989
Rick Miller becomes president on Aug. 23 and succeeds in paying off $575M in debt.

1989

An Wang diagnosed with esophageal cancer in March. Fred Wang departs on Aug. 12.

Earnings plunge $424.3 million. One-third of work force cut.

1990
An Wang dies March 24.

Company reports net earnings loss of $715.9 million. Work force at 19,884.

1991

Net earnings loss of $385.5. Work force declines to 13,500.

IBM invests $25 million in Wang. Wang to sell IBM equipment. Office 2000 debuts.

1992
Files for Chapter 11; reiterates plan to focus on software and services.

Will Wang pull through?

Consensus among Wang watchers is that the company will have a tough, if not impossible, time pulling up its bootstraps and trudging away from the stigma of Chapter 11.

Although Wang Chairman Rick Miller pledged continued support and enhancement for the VS line, the majority of users interviewed last week said they are jumping ship now and expect to be completely off VS within two years.

That means Wang has a limited time to tread water on maintenance revenue accrued from existing customers and must get the reorganization going pronto, many observers noted.

Miller told *Computerworld* last week that he expects the bulk of the 5,000-person layoffs to be done within 30 days and the rest of the reorganization to be carried out "as quickly as possible."

Life may not be easy, though. Filing bankruptcy protection scares existing users and repels potential new customers. Strong rumors circulating for several weeks before Wang actually filed prompted some worried VS users, such as the American Stock Exchange in New York, to step up contingency plans.

Three VS minicomputers link 300 users at the Amex, which has been migrating applications from the minicomputers to local-area networks during the past two years, said Paul Doughty, director of data processing services.

"The fact that [Wang] is in Chapter 11 may help accelerate funding," he added.

Besides customer ill will, Wang must overcome other obstacles, according to Edson de Castro, former head of DG, including:

• **The grueling Chapter 11 process.** "The horrendous legal and accounting issues they have to deal with now will take their focus away from where it should be: products," de Castro said.

• **Clarifying Office 2000.** The 18 months since Wang outlined its office automation strategy does not appear to have been enough time for Wang to clearly explain Office 2000.

Overall, analysts were not optimistic about Wang's chances for survival. "I think they're up against one of the most serious turnaround challenges in the history of the computer industry. It would take a Herculean effort," said Mary Rhodes, director of intelligent document management at New Science Associates, Inc., a Southport, Conn., market research firm.

KIM S. NASH
and THOMAS HOFFMAN

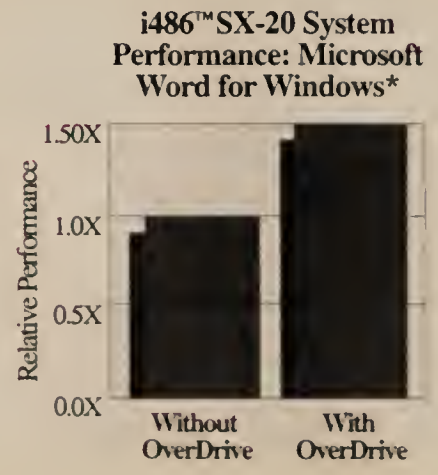
Your upgrade

Introducing Intel OverDrive™ Processors.

With built-in upgradability we promised you room for the future. Room for more power.

Well, the future has arrived. Presenting a revolutionary new category of single-chip upgrades: Intel OverDrive Processors. The easiest, most cost-effective way to add even more power to your system—for Intel486™ SX PCs now, and soon for all 486 systems and beyond.

Just pop in a new OverDrive Processor and you'll improve overall i486 SX system performance by up



©1992 Intel Corporation. Intel486, i486 and OverDrive are trademarks of Intel Corporation. *Windows is a trademark of Microsoft Corporation.

just checked in.

to 70 percent. Added performance that will benefit over 50,000 compatible software applications.

And that goes for today's demanding Windows software, too.

WE MAKE COMPUTERS WORK HARDER.

Find out more. Ask for ext. 97
1-800-538-3373

In fact, by adding an Intel OverDrive Processor, your 486 PC will even run multiple Windows applications faster.

To check in to the OverDrive Processor, see your local computer dealer now.

Or for a detailed brochure, call 1-800-538-3373, ext. 97. And hurry. The vacancies are filling fast.

intel®

Fed users to get ATM service from Sprint

Upgrade in network bandwidth will aid scientific research from genetics to global warming

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The U.S. Department of Energy and NASA last week selected Sprint Corp. to upgrade three national research networks to Asynchronous Transfer Mode (ATM) broadband service.

The huge boost in bandwidth for those networks will significantly speed progress in meeting the so-called "grand challenges" in science, such as global climate modeling and human genetic research, users at the agencies said.

ATM, which moves data in fixed-length "cells," is an emerging technology that will allow data networks to evolve from T1 (1.5M bit/sec.) speeds to as much as 622M bit/sec., the agencies said.

T1 can transmit 20 pages of a standard dictionary in one second, while ATM can move up to 8,000 pages per second.

The T1 networks to be upgraded are the DOE's Energy Sciences Network and NASA's Aeronet and Science Internet.

Joining Sprint in the $50 million, five-year effort are TRW, Inc., which is providing 11 ATM switches; Digital Equipment Corp. for network management hardware and software and systems integration services; and Cisco Systems, Inc. for network routers.

Sprint said it is rolling out ATM for the DOE and NASA on an "early availability basis," beginning later this year. Commercial availability is not expected until 1994.

"We'd expected to have to build the backbone and then find customers," said Dale Williams, an assistant vice president at Sprint's Government Systems Division. "Now we have the customer, and we have to go build the network."

Wave of the future

"This upgrade may show a path for the way the communications industry wishes to go," said David Nelson, director of scientific computing at the DOE. "We as users, as early buyers, are hopefully accelerating the process but not off toward left field."

Nelson said ATM will allow transfer of large files — "gigabytes heading toward terabytes" — from one research site to another.

He added that it will also enable "video to the desktop" — moving as "packetized" data — allowing researchers to collaborate face-to-face without traveling.

Nelson said the ability to move data at 622M bit/sec. will also enable "metacomputing" in which remote computers can be tightly coupled in real time for cooperative processing.

> "THIS UPGRADE may show a path for the way the communications industry wishes to go."
>
> DAVID NELSON
> DOE

For example, Nelson said, a Cray Research, Inc. vector supercomputer at the University of California's Lawrence Livermore National Laboratory could share a computational challenge with a Thinking Machines Corp. massively parallel computer at Los Alamos National Laboratory in New Mexico, software permitting. Each computer would then do what it does best, he added.

The ATM network will provide a service to users of the three government networks and will be available to serve commercial users as well, Williams said. A test network is to connect Sprint to a DOE site by the end of the year; a "preproduction" network serving seven sites is to be in place by mid-1993; and a production network for 33 DOE and NASA sites will roll out beginning in mid-1993, according to Nelson.

The project is funded under the government's interagency High Performance Computer and Communications initiative, one component of which is to develop a gigabit/sec. National Research and Education Network.

The upgrade of the three research networks is one step in the evolution to the National Research and Education Network, Nelson said.

LINE PROTOCOL

COMNET OFFERS THE NEXT-GENERATION TECHNOLOGIES THAT WILL KEEP YOUR NETWORK IN PLAY

15 ANNIVERSARY
COMNET
GET THERE FIRST

If you face the migration to distributed computing and enterprise networking, there's one thing you should know: ComNet has the resources to get you there first.

We start by giving you a complete selection of product options: over 450 exhibiting companies will display full product lines at ComNet '93. That includes every major player in networking and communications — from carriers to cable suppliers. You'll get the latest offerings in multiprotocol LAN routers, frame relay and bandwidth-on-demand services, to name just a few.

Evaluating your options is made easier at the ComNet Conference. Our coverage of new paradigm networking issues is focused, detailed and relevant. Among this year's topics you'll find TCP/IP to GOSIP transition strategies, the vices and virtues of SNA and APPN.

To see the most of what's new, check out the LiveNet show-within-a-show. LiveNet features the industry's first full-scale demonstration of high performance enterprise networking, with applications up and running. There's also a dedicated exhibit hall and ComNet Tech — a highly technical conference track covering technologies like ATM, FDDI, Fiber Channel, HIPPI, Isochronous Low Latency LAN Interfaces and more.

Find out what else ComNet has to offer your team. Just fill out the attached coupon for more complete conference information and a FREE exhibits pass to ComNet '93.

FEBRUARY
1-4, 1993
•
WASHINGTON, D.C.

LIVENET
EXPERIENCE LEADING EDGE TECHNOLOGIES IN HIGH PERFORMANCE ENTERPRISE NETWORKING.

GET FREE ADMISSION TO OVER 450 EXHIBITING COMPANIES PLUS DETAILED INFORMATION ON ISSUES AND SOLUTIONS AT THE COMNET CONFERENCE, FEBRUARY 1-4, 1993, WASHINGTON D.C.
T2

NAME/TITLE _____

COMPANY _____

ADDRESS _____

CITY/STATE/ZIP _____

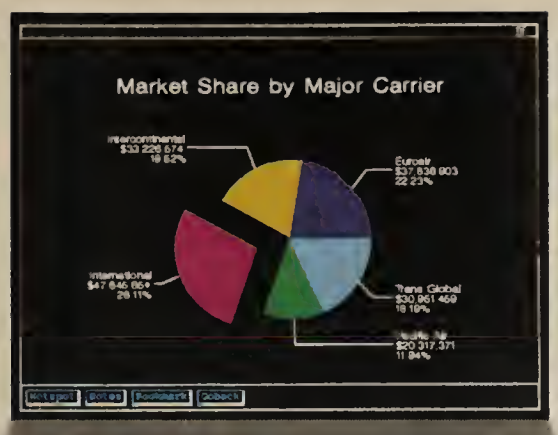
MAIL TO: COMNET '93, P.O. BOX 9107, FRAMINGHAM, MA 01701-9107
PHONE: 800-225-4698 OR FAX TO: 508-872-8237.

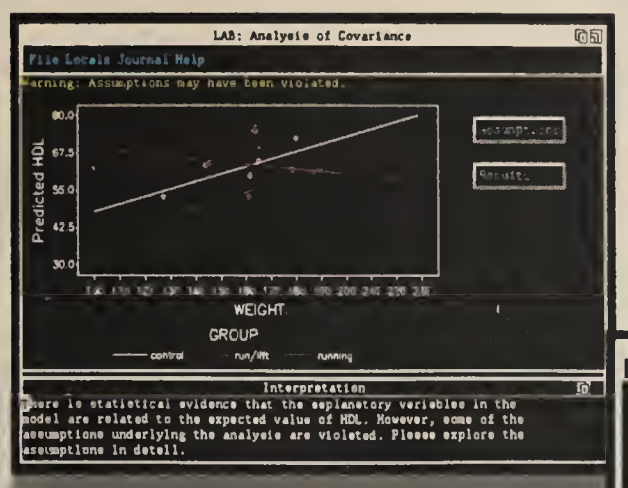
ComNet™ is produced by World Expo Corp. and sponsored by Network World.
LiveNet is sponsored by Computerworld.

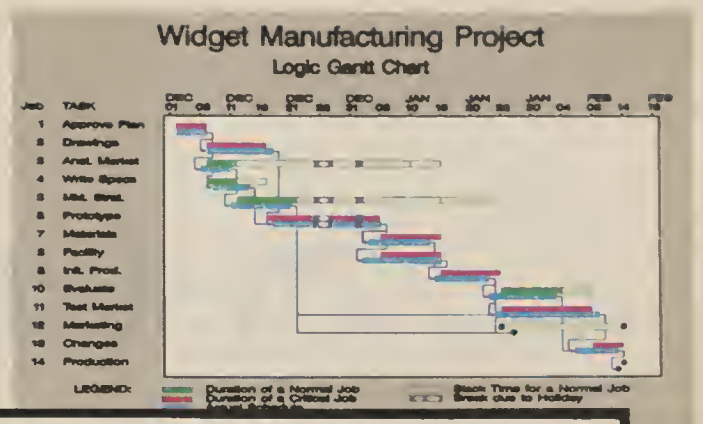
SAVE MONEY RECRUITING STAFF.

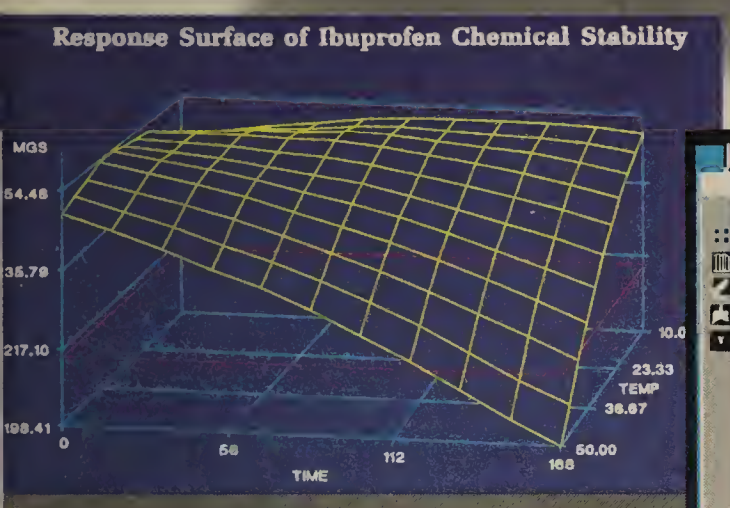
Advertise in Computerworld's regional careers pages. They work.

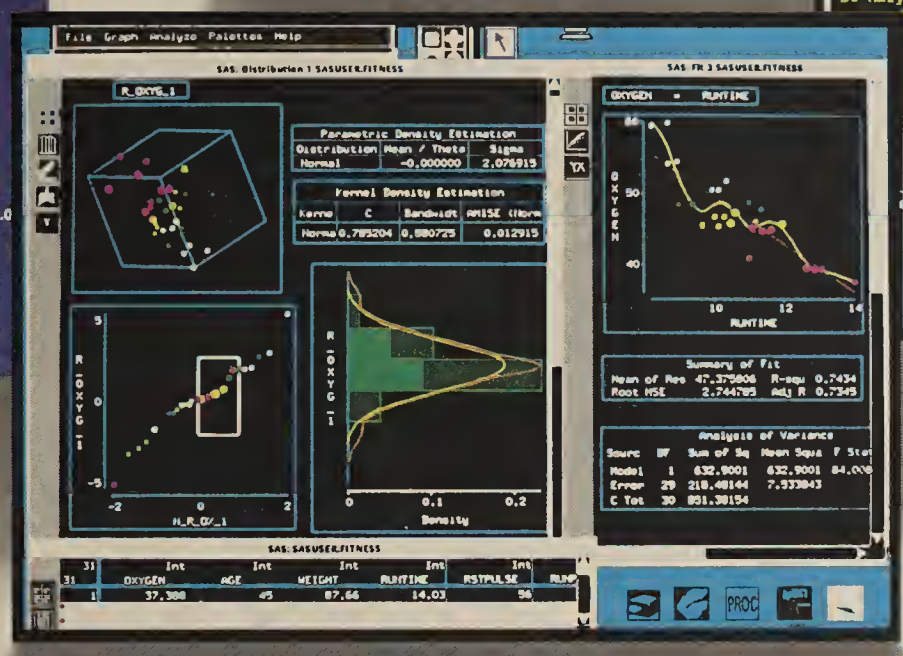
800-343-6474
x201

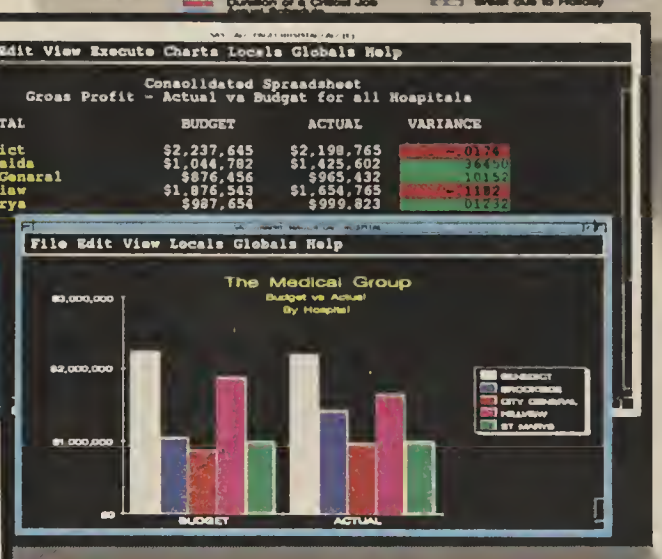












All It Takes to Turn Raw Data into Real Information.

The SAS® System for Information Delivery.

The head of new business development is demanding next year's sales predictions—by next *week*. The Total Quality Management team has found an outstanding new way to design experiments—but their stand-alone software doesn't know how to do it. And the CFO is still looking for spreadsheets—of unlimited size.

Unfortunately, your time *is* limited. And so is your budget for new analytical packages. So how can you possibly keep up with the diverse data analysis needs of your diverse user community? The answer is the SAS® System for Information Delivery.

One System for Your Organization's Entire Range of Data Analysis Needs

No matter what kind of data they're analyzing, your clients will get results they can trust with the SAS System. Renowned statistical tools are fully integrated with powerful operations research, econometric, and time series methods.

For specialized tasks, explore the SAS System's quality improvement, experimental design, clinical trials testing, laboratory data analysis, and visualization techniques.

There's even an interactive matrix language for the most advanced mathematical, engineering, and statistical needs.

Call Today for a Free Evaluation

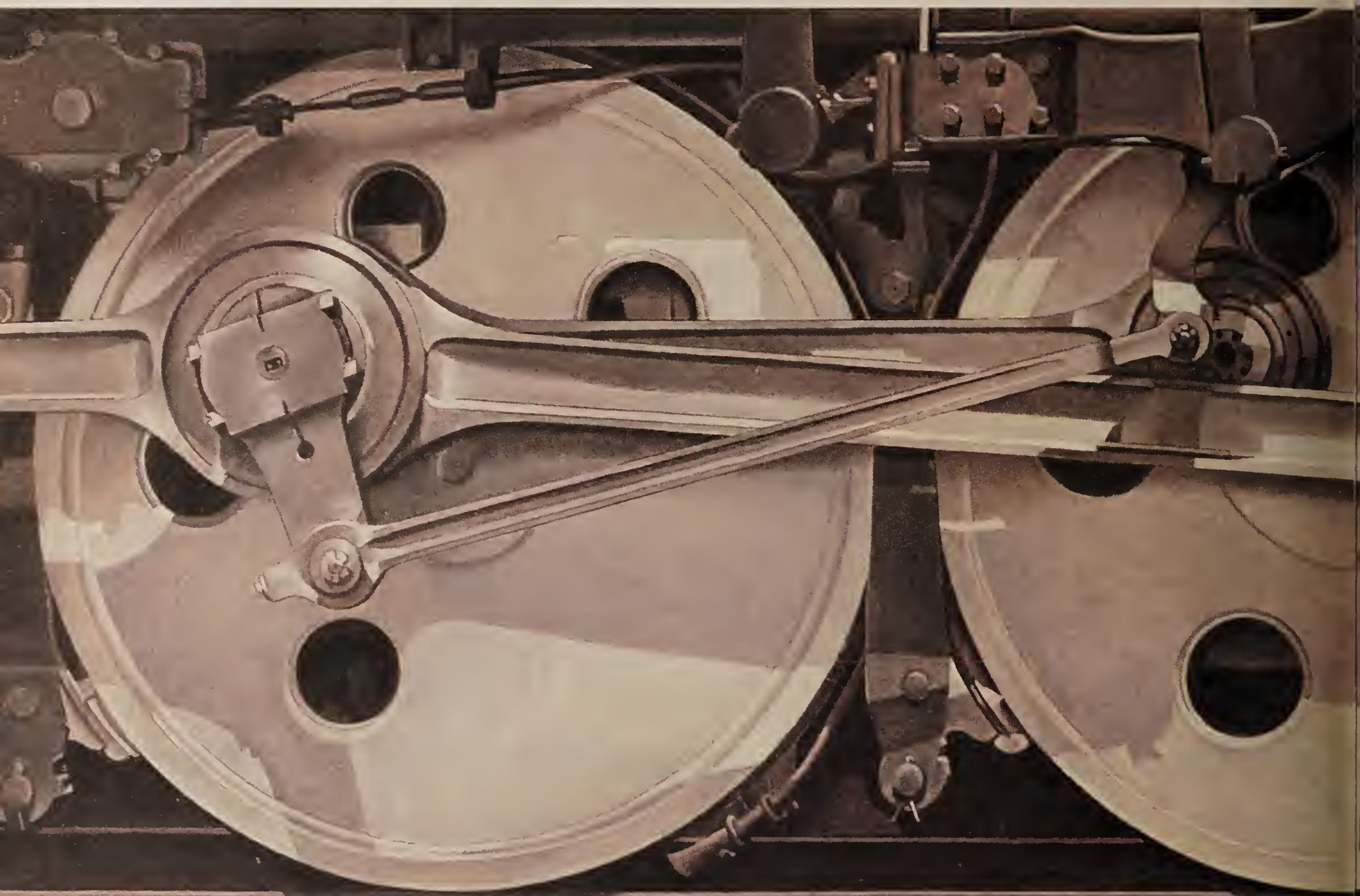
See for yourself why more than 20,000 companies—from aerospace to agriculture, manufacturing to medical research—trust their most important data to the SAS System. Just give us a call at 919-677-8200 to discuss your organization's analytical needs and to receive a free SAS System executive summary. Also ask for details about the SAS System Executive Briefing...coming soon in your area.

The SAS® System.
The World's Leading
Information Delivery System.

SAS Institute Inc.
Software Sales Division
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1992 by SAS Institute Inc. Printed in the USA.

Systems integration.



The machinery is complica

The reason you have a computer system is to arrive on time at your business goals.

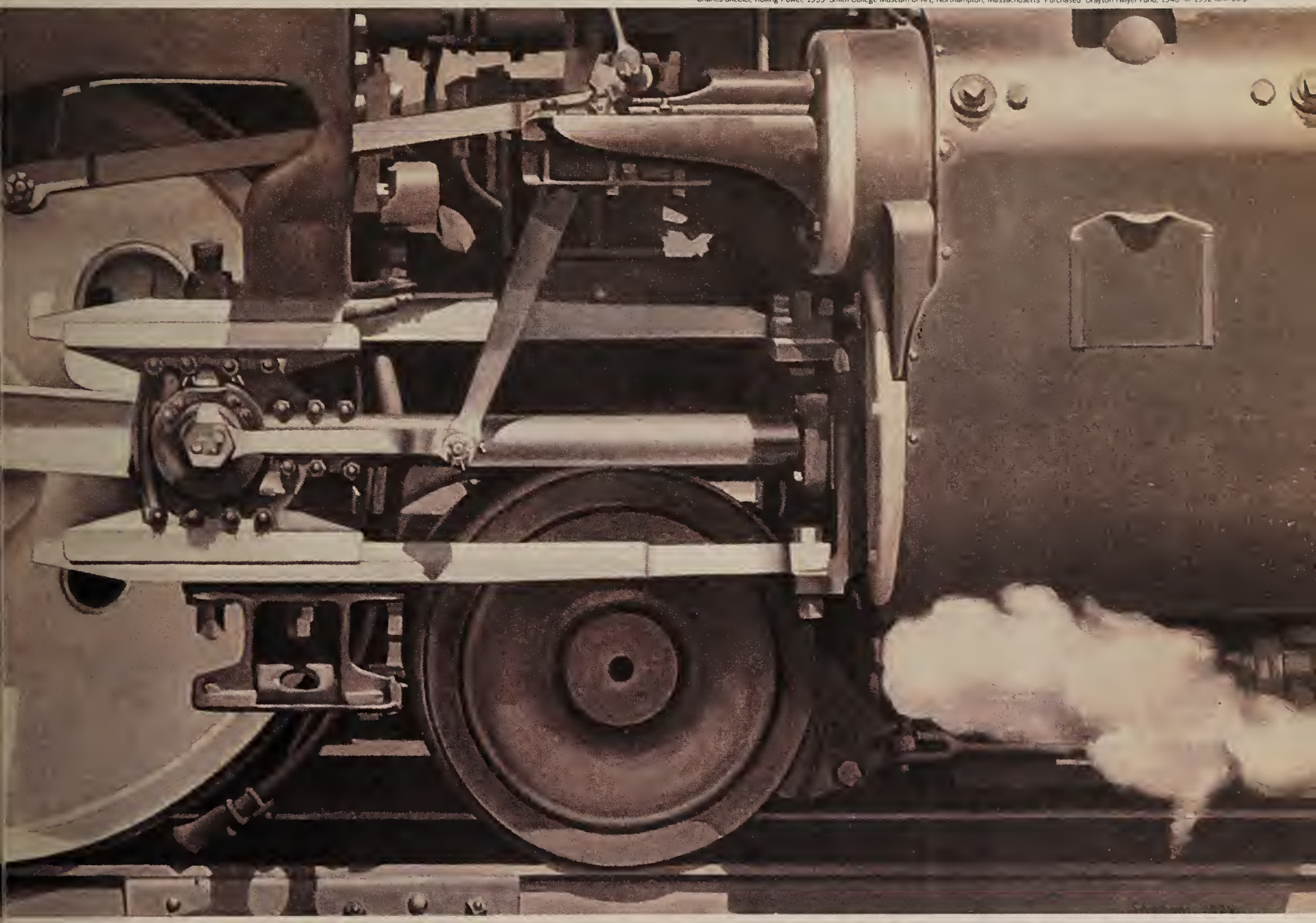
But if all the pieces aren't working together, your system can be more a distraction than an asset—impeding, rather than speeding, your journey.

That's why many companies call on systems integrators to make things work better; to upgrade existing systems, to build new ones and, most important, to be there for the long run.

Of course, choosing the right integrator is still your job, so here are some things to look for:

Find someone who's solved your kind of

Charles Sheeler, *Rolling Power*, 1939. Smith College Museum of Art, Northampton, Massachusetts. Purchased: Drayton Hillyer Fund, 1940. © 1992 IBM Corp.



d, but the passenger shouldn't have to worry about it.

problem before, for your kind of business. Someone whose experience with systems and software, with networks and network management, from PCs to mainframes, is complete.

Which is someone like IBM.

Also, look for someone who can manage big projects, hire the right subcontractors, train your people and steer you toward future technologies.

Again, someone like us.

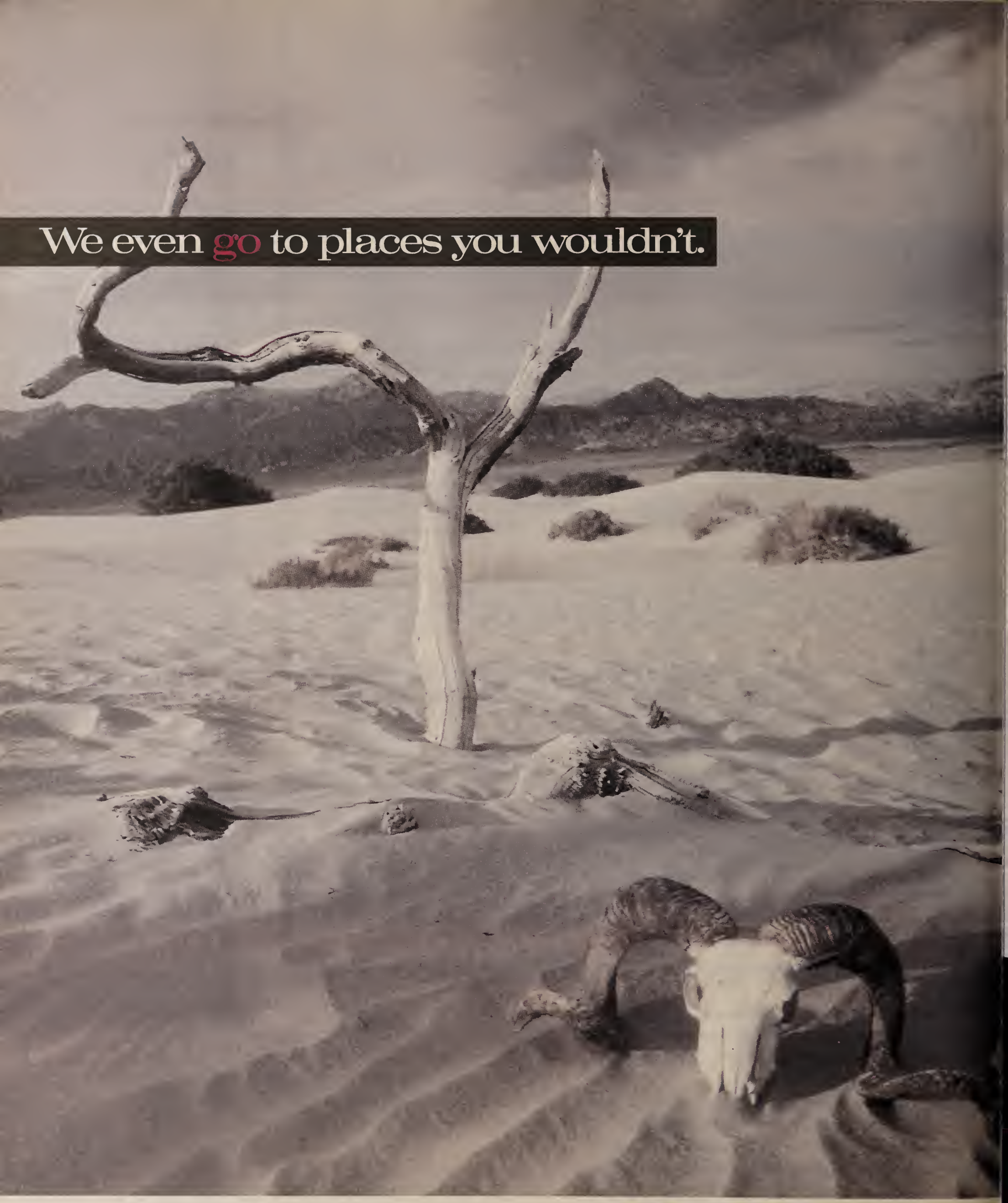
But mostly, you want a good listener—someone who understands that your situation is unique, and who'll bend over backwards to make things work.

And that's why the Administrative Office of the Pennsylvania Court chose IBM. They needed to automate and network 538 judicial offices, facing complexities that were almost indescribable. But they'll tell you we were *very* open-minded, and that we included end users from the start, which helped us leap all kinds of hurdles.

As a result, they now have a consistent, statewide system, and it not only works, it works their way.

For a free brochure, or to have an IBM marketing rep call you, call us at 1 800 IBM-6676, ext. 793.

IBM®



No other long distance company goes to the ends of the earth the way we do. We go to more places with a wider array of options, than any other long distance carrier. Period.

With the largest dedicated videoconferencing network. We go to 1300 sites in over 35 countries. With more public data network access centers. We're in over 100 countries. With direct dial voice communications to over 220 countries and locations. Worldwide.

To find out how we can make a difference in your business, give us a call. Sprint®. We can get you anywhere. Even if anywhere happens to be nowhere.

Call **1-800-377-1399.**

Sprint®

Not just another phone company.™

© 1992 Sprint Communications Company L.P.

YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of $29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name

Title Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $74.97, Central/South America $130, Europe $195, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
80. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

E4234-2

YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of $29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name

Title Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $74.97, Central/South America $130, Europe $195, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

E4234-2

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144

ADVANCED TECHNOLOGY

TECH TALK

Tackling the big ones

■ Solve this problem: How do you clean up groundwater pollution? Or this one: How can you make fuel burn more efficiently?

These are only some of the problems being attacked under six "grand challenge" projects funded by the U.S. Department of Energy. The projects are scheduled to receive a total funding of $20 million, including cost-sharing by universities, states, corporations and foundations, during the next five years. Nine national laboratories, 16 universities and more than 40 businesses are planning to participate in the projects.

They fall under the following headings:

- **Computational chemistry**, which studies the impact of various pollutants and the use of natural enzymes to clean them up.
- **Structural biology**, with researchers developing software to study proteins and diseases.
- **Computational fluid and combustion dynamics**, with computer simulation of more efficient engines, incinerators and power plants.
- **Petroleum reservoir and groundwater modeling**, seeking to develop algorithms and computer codes for modeling petroleum and water flow through porous geologic formations.
- **Numerical tokamak**, in which computer simulations will be used in an effort to reduce the development costs of fusion reactors.
- **High-energy physics**, with massively parallel computers being used to determine the basic properties of matter at the subnuclear level.

Reaching agreement

■ Mitsubishi Corp. in Tokyo and Verbex Voice Systems, Inc. in Edison, N.J., said they have developed a computer that recognizes continuous Japanese speech. The Japanese Voicestation, demonstrated last month in Tokyo, is intended to help users converse with and control computer-based systems with a natural and accurate interface.

Users: 'We want our data faster!'

Project targets goal of making storage devices capable of accessing data more quickly

BY JOHANNA AMBROSIO
CW STAFF

"Break the bottleneck" is the battle cry of a group of users and vendors working on the next generation of storage technology. The goal is to vastly increase the speed at which people can access their data by up to 50 times over today's systems.

Although the project is initially targeted at the scientific and technical world, some advances are expected to make their way into the commercial arena within five years.

The collaboration is called the National Storage Laboratory and is housed in the University of California Lawrence Livermore National Laboratory in Livermore, Calif.

The venture got under way formally in May, but hardware and software is still being delivered, and the bulk of the three-year project is scheduled to begin early next year, according to Richard Watson, the project coordinator at Livermore.

Multivendor push

Six vendors are providing software and hardware, including a 20G-byte disk array from IBM's Adstar storage company in San Jose, Calif.; a solid-state memory device from Zitel Corp. in Milpitas, Calif.; network switches and gateways from Network Systems Corp. in Minneapolis; and UniTree storage software from General Atomics' Discos Division in San Diego.

IBM's Federal Sector Division is the systems integrator, and Ampex Recording Systems Corp. is providing high-speed, high-capacity tape systems. Four National Science Foundation Supercomputer Centers, including those at the University of Illinois and the Pittsburgh center, are also planning to participate.

Indeed, the project's initial applications will be three for the scientific world: climate modeling, magnetic fusion energy research and real-time editing of computer-generated movies.

The common theme is that these applications require very large data sets that can take four hours or even longer to move from the supercomputer on which the data resides to the workstations being used by the scientists.

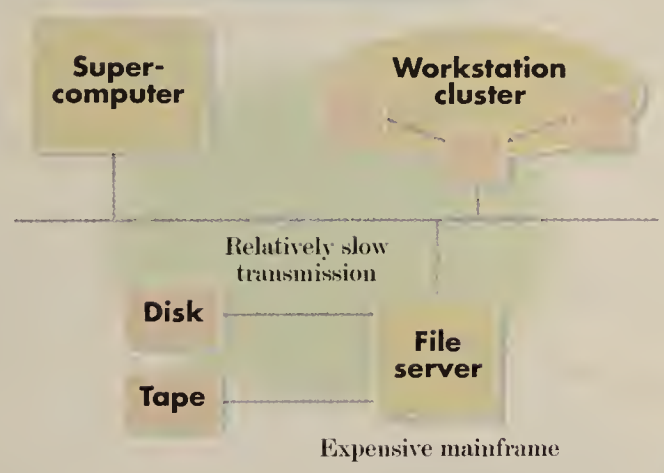
"The idea is gigabytes of storage at gigabit rates," said Don Olker, vice president of business development at Zitel.

The bottleneck today occurs because of the way data moves through the system, from a supercomputer through a file server and then into the workstation. The new architecture calls for data to be routed through a high-speed network or a switch between the storage device and the workstation.

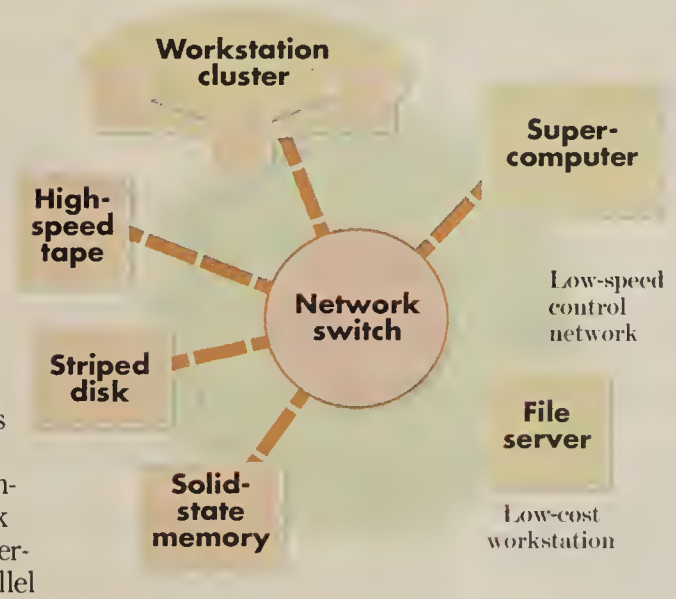
Today's storage systems can move 8 million to 16 million bits of information each second. The project's goal is to move 100 million to 400 million bits each second.

To accomplish this, the National Storage Laboratory will assemble existing commercially available storage systems communicating over a high-speed network called High Performance Parallel Interface (Hippi). As a model, the group is using the architecture from the Storage Systems Standards Working Group of the International Electronics Engineers.

Traditional architecture



New high-performance storage architecture with high-speed data transfer



"There's very little new invention required here; it's just a matter of applying a new approach in terms of connectivity," said Bruce Henry, a senior architect at IBM Adstar.

In this model, the data storage device — whether it is disk or tape or optical — is attached directly to the network instead of to a server. A lower speed network is used to send messages requesting data; the high-speed network is used to send the actual data.

"Network-attached storage architecture is going to be a major emerging technology in the server world," Watson said. "This is not the first time it's been thought of — it's the first time all the pieces are there to make it work."

This will, however, require more advanced storage management software, such as software that gives you the ability to manage multiple sites from one central control point, than what is commercially available today.

Another breakthrough will be needed in the area of storage hierarchies. In today's commercial systems, frequently used data is kept on disk, and less frequently used data is on tape. But if a new type of tape is added, it will require a new hierarchy: disk to new tape, old tape to new tape and so on. Today's storage systems cannot handle this level of complexity.

Years from market

Although three years is the time frame for the project to be completed, it may take longer for the technical advances to find their way into the commercial world. "It's a bit early," said James Porter, president of Disk/Trend, Inc. in Mountain View, Calif. "The requirements for numbers of transactions, transfer rates and capacity are atypical for most of the computer industry."

Still, he said, there may be "useful by-products" for the industrial sector in "improving the efficiency of some commercial systems."

Ken Hallam, a partner at ENDL Associates, a storage consulting firm in San Juan Capistrano, Calif., said, "The problem here is software. The new storage architecture says that where the data is stored — head, track, sector — is independent of the actual device. But that's not how software is written today; you need to know all those things."

"If a commercial application had very large files and wanted to access them very rapidly, there's no reason why this model wouldn't apply," Henry said.

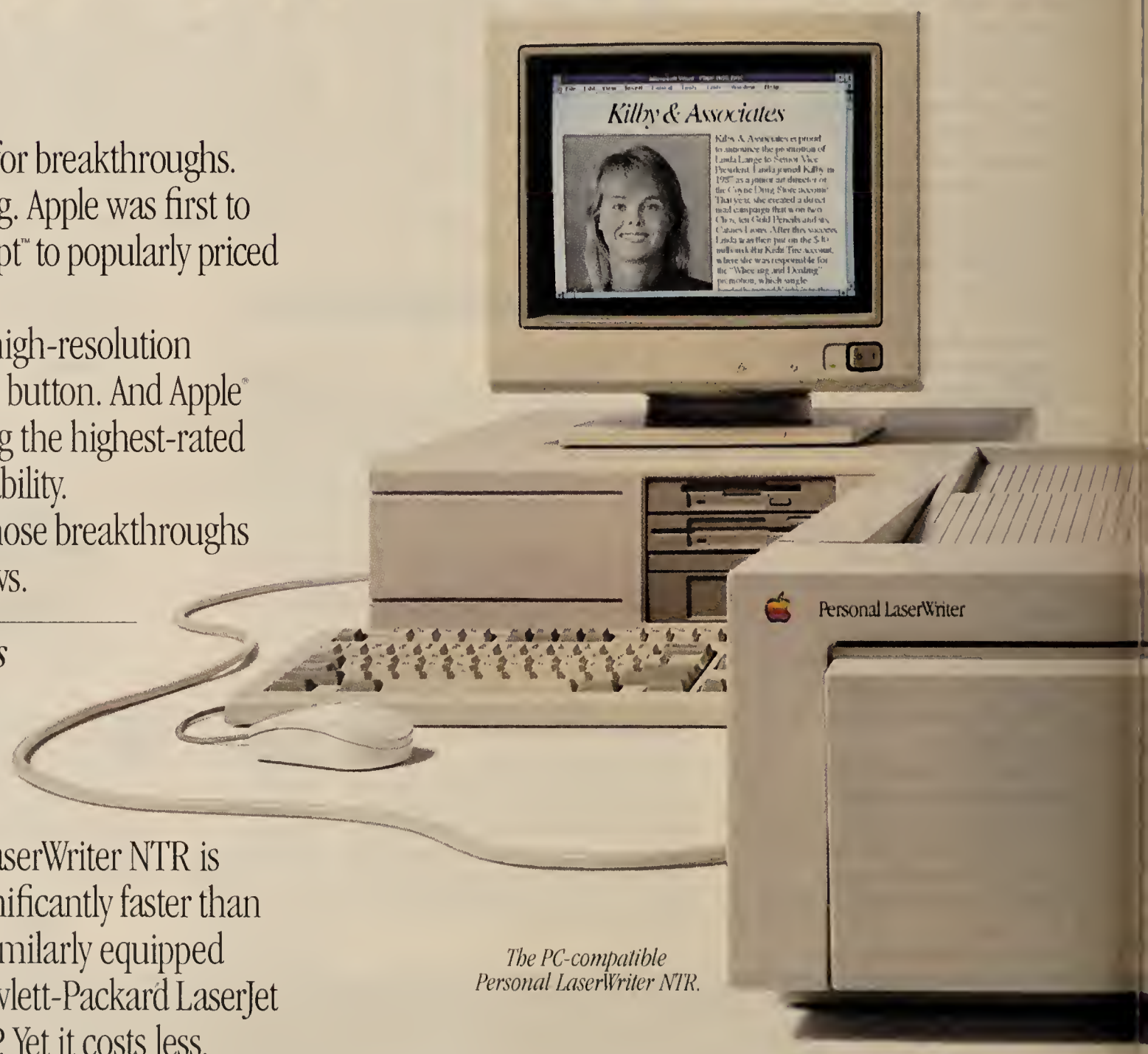
However, he added, that would require that commercial processors have a Hippi channel in addition to Escon and other channel-attachment protocols used in many commercial environments today.

Apple announces a between Windo

Apple has long been known for breakthroughs. Apple pioneered desktop publishing. Apple was first to bring the quality of Adobe™ PostScript™ to popularly priced laser printers.

Apple was the first to make high-resolution scanning as easy as one touch of a button. And Apple® LaserWriter® printers remain among the highest-rated printers for image quality and durability.

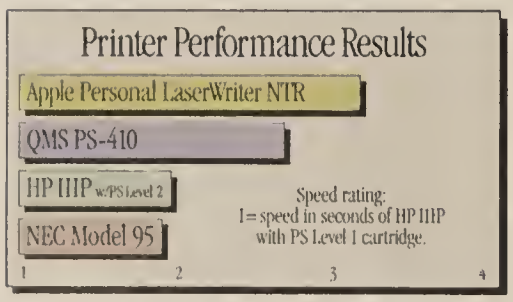
Now, Apple is extending all those breakthroughs to people who use PCs and Windows.



The PC-compatible Personal LaserWriter NTR.

The fastest printer in its class for PCs.

With a RISC controller that assembles pages at incredibly high speeds, the Apple Personal LaserWriter NTR is significantly faster than a similarly equipped Hewlett-Packard LaserJet IIIP. Yet it costs less.



The RISC-based Personal LaserWriter NTR dramatically outperforms the HP LaserJet IIIP, the QMS PS-410 and NEC Model 95.

The LaserWriter NTR comes standard with Adobe PostScript Level 2 and LaserJet II PCL compatibility, a parallel port to connect to your Windows PCs and an AppleTalk® port to connect to your Macintosh® computers. And since both of these ports are simultaneously active, it can receive documents from both Macintosh and PC users without flipping any switches.

So the LaserWriter NTR is not just faster. It's also more flexible.

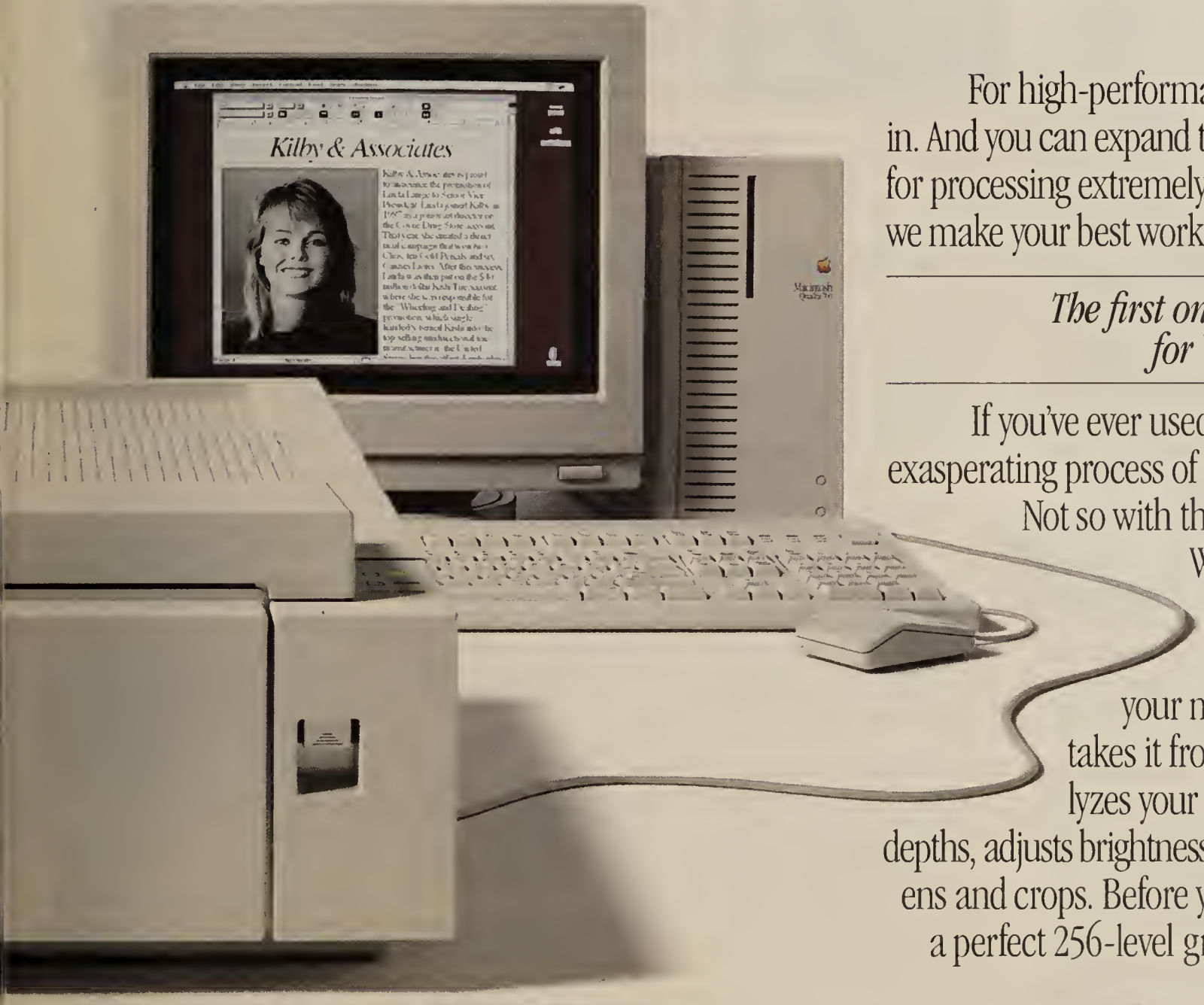
The first PhotoGrade printer for PCs.

On the left, conventional laser printing. On the right, Apple PhotoGrade printing. Which will do more for your image?

Like the LaserWriter NTR, the Apple LaserWriter IIg works equally well with both Macintosh and PCs. But it adds an innovative Apple gray-scale technology called PhotoGrade™

POSTSCRIPT © 1992 Apple Computer Inc. All rights reserved. Apple, the Apple logo, AppleTalk, LaserWriter, Macintosh and "The power to be your best" are registered trademarks of Apple Computer Inc. FinePrint, OneScanner and PhotoGrade are trademarks of Apple Computer Inc. Adobe PostScript and the PostScript logo are trademarks of Adobe Systems Incorporated, which may be registered in certain jurisdictions.

major breakthrough
ws and Macintosh.



For high-performance networks, Ethernet is built in. And you can expand the memory to 32 megabytes for processing extremely complex documents. At Apple, we make your best work look even better.

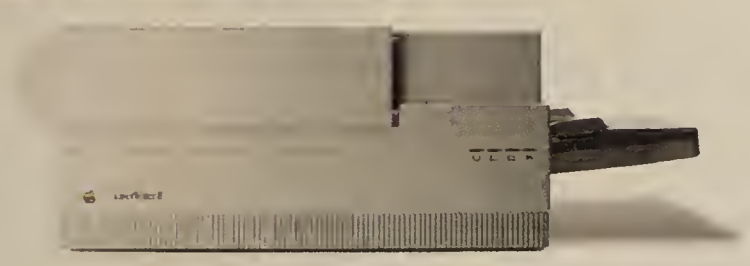
The first one-touch scanner for Windows.

If you've ever used a scanner, you know it's an exasperating process of fiddling, futzing and adjusting. Not so with the Apple OneScanner™ for Windows. You simply pop your photograph or other artwork onto the scanner and click your mouse once. The OneScanner takes it from there. It automatically analyzes your image, sets the dpi and bit depths, adjusts brightness and contrast, and even straightens and crops. Before you know it, you've got yourself a perfect 256-level gray-scale scan.

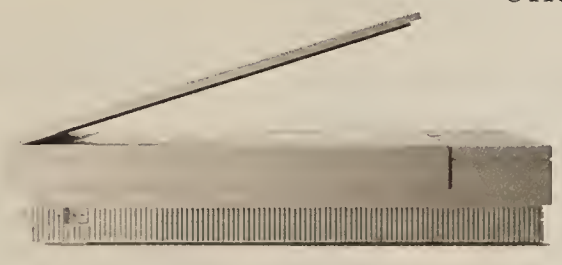
One click. It's really that easy.

Your authorized Apple reseller will be glad to demonstrate just how much these breakthroughs can do for all your Windows PCs. For the location of a reseller in your neighborhood, call 800-538-9696, extension 145. And discover the power to make your work look better than ever. The power to be your best.

that delivers pages with image clarity comparable to 800 dpi.



The PC-compatible LaserWriter IIg.



The OneScanner for Windows.

Documents that incorporate photographs look nothing short of amazing. And with Apple's exclusive FinePrint™ technology, even text and line art have sharper edges and smoother curves than ever before.

ademark of Microsoft Corporation. LaserJet is a registered trademark of Hewlett-Packard Company. This ad was created using Macintosh personal computers.

EDITORIAL

Lessons

For all sad words of tongue or pen, the saddest are these: "It might have been!"
—John Greenleaf Whittier

When business school professors wish to make a point about lost opportunity, they often refer to the railroad companies. Those companies mistakenly thought they were in the railroad business when, in fact, they were in the transportation business. That erroneous judgment left the railroaders standing at the roundhouse while trucking companies, and later the airlines, roared by them.

Thus was the case with Wang Labs, which last week found itself running for protection from its lenders under the shelter of Chapter 11. Perhaps more than any other foundering computer company in history, Wang lost sight of its business. Therein lie the most poignant and wrenching lessons of the 1990s, not only for vendors but also — and maybe even more so — for the people who buy, deploy and manage information systems.

Understand that Wang was not just a case of another minicomputer company blown away in the PC revolution. This is a company that was an extraordinary technology innovator. Its founder invented mass storage. The company brought sophisticated desktop and palmtop calculators to the masses. It completely and irreversibly redefined the way work was done in the office. It was as though the company had stolen a page from the Bobby Kennedy school of thought: "I look at what could be and ask 'Why not?'"

So what happened? I recall a dinner meeting with two senior Wang officials three years ago, the week Chairman Rick Miller was brought aboard. I presented my guests with page after page of independent research that showed a Wang customer base growing wary of slack service and support. I showed them other data, none of it new to them, that indicated the rapidly growing user penchant for open systems computing. Meanwhile, Wang had little in the works to respond to these and other crying needs from its own customer base.

Its response? "When you're growing your revenue and profits at 30% per year, it's hard to think you could be doing anything wrong."

In the end, no one really cared about Wang's pioneering innovations in office automation. Similarly, no one in today's world really cares about the accomplishments of IS professionals in solving yesterday's problems with yesterday's technology, no matter how well it was done.

In all the recently written analyses about Wang's demise, the word "unforgiving" pops up consistently. An unforgiving market. An unforgiving industry. An unforgiving global economy. It is an environment in which nice guys who build great companies cannot afford to forget that they are only as good as what they do today.

Bill Laberis

Bill Laberis, *Editor in chief*

LETTERS TO THE EDITOR

Sees benefits of Repository Manager

While some may feel that IBM's plans for Repository Manager/MVS were too grand, we believe its objectives serve information technology well: to provide an enterprisewide, tool-enabled repository.

The major problem (and perhaps this is the real reason that you applaud IBM's move away from a host-based repository) could simply be that RM/MVS was not the right implementation of an enterprisewide repository product ["Out like a lamb," CW, July 20].

This leads us to the biggest issue in IBM's repository rollout strategy. The initial release of RM/MVS was billed as a "vendor" release, which means that IBM did in fact recognize the need to gather a large support base.

Most vendors will agree that the initial software, although it was well-documented, was quite intimidating and that there was very little expertise available in the marketplace (or available directly from IBM) to leverage a vendor's efforts.

By building an all-encompassing information model before putting it to the test with integrated, repository-based tools, IBM has asked the information technology community to take too large a leap of faith.

Similar to its current efforts to surround OS/2 with applications and application development tools, IBM needs to prove that repository-based development has real benefits.

Barry Brown and Lewis Stone
BrownStone Solutions

Is honesty the best policy?

This is regarding "IS cover-up charged in system kill" [CW, Aug. 10]. What really captured my interest is Max Hopper's observation: "Honesty is an imperative in our business."

On one hand, I'd like to see that phrase carved in marble and placed on the lintel of every data processing office in the world.

On the other hand, I know that honesty is one of the first casualties (along with quality) when a project becomes shaky.

Fortunately, resuscitating honesty is fairly simple, and the "bean counters" will appreciate that it won't cost a dime.

All management would have to do is stop shooting the messenger!

Certainly it would be nice if everyone were heroic enough to face the dangers of telling their superiors that a major problem has arisen.

However, it takes a hero, a novice or a fool to risk becoming the scapegoat when these things happen.

A novice will do it once; a hero will do it a second time; but as one grows older with more responsibilities and more to lose, being honest starts to look more and more quixotic.

William R. Rouza
Chula Vista, Calif.

Relcom: E-mail Russian style

It's great to see coverage of the Russian computing scene, and I applaud John Morrison's efforts to publicize and exploit (in the very best sense) Russia's immense reservoir of programming talent ["Programming perestroika," CW, Aug. 3].

But I would like to put in a good word for Relcom, an electronic-mail network akin to our Internet.

Relcom is a highly successful E-mail network, with more than 60,000 users from a community of 500,000 to 1 million personal computer users overall — a very respectable proportion compared with the U.S.

Relcom offers regular E-mail as well as a variety of local and international information services. Part of its success, of course, is that the telephone system as a whole is so bad: You let your computer do your dialing overnight.

I find Relcom incredibly valuable in setting up appointments, sharing information and simply keeping in touch, as do many of my Russian friends.

Incidentally, much of Relcom's funding comes from the banking and exchange communities, which use it to exchange financial information.

Esther Dyson
New York, N.Y.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

COMPUTERWORLD

Editor in Chief
Bill Laberis
Executive Editor
Paul Gillin
News Editor
Alan Alper
Technical Sections Editor
James Connolly
Assistant News Editor
Patricia Keefe
Senior Editors
Elisabeth Horwitt, Networking
Rosemary Hamilton, Personal Computing
Nell Margolis, Management
Maryfran Johnson, Workstations
Joanie M. Wexler, Networking
Johanna Ambrosio, Systems & Software
Garry N. Ray, Application Development
Senior Writers
Michael Fitzgerald
Melinda-Carol Ballou
Staff Writers
Carol Hildebrand
Christopher Lindquist
Kim S. Nash
New Products Writer
Lisa Davidson
Features Editor
Joanne Kelleher
Senior Editors
Joseph Maglitta
Lory Zottola Dix
Mary Grover Brandel
Joyce Chutchian
Assistant Editors
Jodie Naze
Kelly E. Dwyer
Assistant Researcher
Stefanie McCann
Columnist
Jesse Berst
Intern
Chad Blair
Research Manager
Michael L. Sullivan-Trainor
Research Coordinator
Kevin Burden
Product Research Coordinator
Derek Slater
Chief Copy Editor
Catherine Gagnon
Assistant Chief Copy Editor
Alice Lesch Kelly
Features Copy Editors
Kimberlee A. Smith
Steven J. Condon
Copy Editors
Anne McCrory
Stephen P. Klett Jr.
Christina Aicardi
Design Director
Nancy Kowal
Graphics Designer
Tom Monahan
Design Assistant
Janell Genovese
Graphics Specialists
Michael Siggins
Stephanie Faucher
Cartoonist
Rich Tennant
Office Manager
Linda Gorgone
Editorial Assistants
Lorraine Witzell
Connie Brown
Aleksandra Skulte
Rights and Permissions Manager
Sharon Bryant
Back Issues
Margaret McIndoe
News Bureaus
Mid-Atlantic
(201) 967-1350
Thomas Hoffman, Correspondent
Washington, D.C.
Mitch Betts, National Correspondent
(202) 347-6718
Gary H. Anthes, Senior Correspondent
(202) 347-0134
West Coast
(415) 347-0555
Jean Bozman, Senior West Coast Editor
James Daly, Senior Correspondent
Mark Halper, Senior Correspondent
Brenda Cruden, Editorial Assistant
(801) 532-4277
Michele Dostert, Correspondent
Midwest
(708) 827-4433
Ellis Booker, Bureau Chief
Main Editorial Office
Box 9171, 375 Cochituate Road
Framingham, MA 01701-9171
(508) 879-0700
Fax: (508) 875-8931
MCI Mail: COMPUTERWORLD
Subscriptions: (800) 669-1002

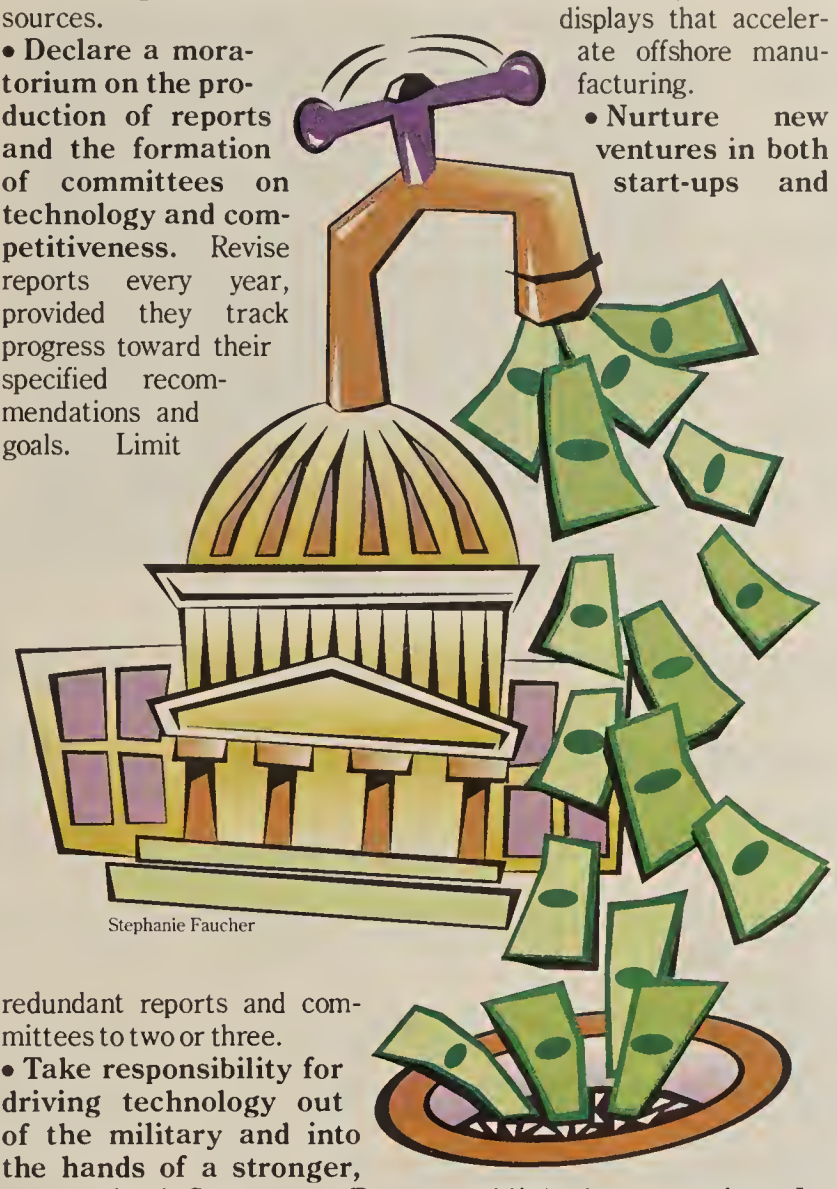
Revising our technology policy

GORDON BELL

My bottom line for a better technology policy: Stop trying to centralize everything. Reduce government control and spending and distribute the responsibility for technology to industry groups.

The Executive Branch needs goals, plans with payback and accountability — not policies that enlarge an out-of-control bureaucracy. One only has to look at the High Performance Computing and Communications Initiative to see how big bucks and concentrated power can induce brain damage and wreak havoc.

In the 1970s and '80s, the Defense Advanced Research Projects Agency (DARPA) supported university research that formed products, companies and even industries. Now DARPA controls the supercomputer market with a massive development and procurement budget, creating more government-dependent companies while concentrating on massively parallel machines that may be minimally useful.



Stephanie Faucher

Ready for action

I have some suggestions for increasing technology competence and reducing federal R&D spending that that can be executed immediately by the Executive Branch.

• **Assign technology management responsibility to self-organized industry groups with government partners.** These industry groups will lead the planning to regain technology leadership, including the formation of consortia or laboratories. Their plans would be self-funding and include redirected government resources.

• **Declare a moratorium on the production of reports and the formation of committees on technology and competitiveness.** Revise reports every year, provided they track progress toward their specified recommendations and goals. Limit redundant reports and committees to two or three.

• **Take responsibility for driving technology out of the military and into the hands of a stronger, reorganized Commerce Department.** Give the secretary of commerce equal power on the Cabinet and reorganize the Commerce Department so that people are responsible for industrial segments, not policies. Communication with industry would reduce blunders such as tariffs for the protection of dynamic random-access memory and LCD displays that accelerate offshore manufacturing.

• **Nurture new ventures in both start-ups and established companies.** Invest government funds that would otherwise go to agencies or labs in ordinary venture funds, stimulating technology transfer from government laboratory to commercial exploitation via start-ups. Reward venture intrapreneurship at large and endangered companies through R&D tax credits that stimulate new ventures.

• **Privatize federal labs and allow them to go into business.** The World Bank has just completed a study showing that privatization does create wealth. Reduce the $75 billion we spend on government R&D by requiring every lab to establish a timetable for privatization.

Immediately encourage labs to sell goods and services. Create external review boards to calibrate labs and aid transfer.

• **Address manufacturing as our highest priority.** Manufacturing engineers aren't even in the investment food chain the "research establishment" controls. This is an intellectual problem: Manufacturing is not considered academically respectable. The Japanese have it right. We have to change.

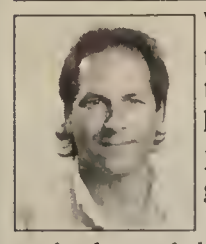
We also need to reward companies like Hewlett-Packard and IBM that are committed to manufacturing and discourage firms like Apple from becoming distributors for foreign products.

Output is the key, not budget control or policy. Applying any of these recommendations would move the U.S. in a positive direction, creating new models for growth.

Bell is a computer industry consultant at large, former head of R&D at Digital Equipment Corp., a member of various boards (including that of the Computer Museum) and winner of the 1991 National Medal of Technology.

Users unite! Let's stand up for our basic rights

JERRY GOLICK



What happened to the revolution? Where have all the young turks gone?

In the bright early days of the personal computer movement, we were going to liberate ourselves from the mainframe. Computers were going to be placed in users' hands. Long delays in applications development would be a thing of the past. Well, 10 years have come and gone. Are we any better off?

Today's microcomputers are as complex as mainframes and require specialists to handle their care and feeding. Users are being forced to buy hardware and software they really don't want. Basically, we never got any of that promised control.

It's time to assert our rights and throw off the yoke of complex computation. Time to remind those in power that we raised them up and we can bring them down.

I, therefore, have taken it upon myself to write a new manifesto of end-user rights. It's just a start.

A user manifesto

I have the right to intelligent interfaces. Users should not have to learn interfaces — interfaces should learn their users. Graphical user interfaces are not the end of interface research. In the meantime, the user should select the interface, not the developer.

I have the right to be mouse-free. Developers and manufacturers should not force the mouse down users' throats. Give us alternatives!

I have a right to software that works. Shrink-wrapped software has allowed developers to sell bug-riddled software at no risk to themselves. Developers must be held responsible for correcting bugs.

I will not tolerate or support planned software obsolescence. We are tired of being asked to buy the same program every year. Vendors are earning unfair profits by forcing users to pay for the same functions in a new wrapper.

I have a right to support services. Developers should guarantee access to support. Those who fail to meet minimum requirements should not receive our hard-earned dollars.

I have a right to interoperability. Software and hardware must work together. Developers and manufacturers must guarantee this or come under severe penalty.

I have a right to innovation. Where are the radical new hardware platforms? Where are the bold new directions in software? How long will we be asked to keep buying the same thing over and over again? We fear the creation of a new IS department built around the microcomputer. Already the technology requires experts and specialists. What has happened to the new wave thinkers?

I have a right to choose. No one should dictate the needs of the individual PC user. Let each of us choose the best solution for our requirements.

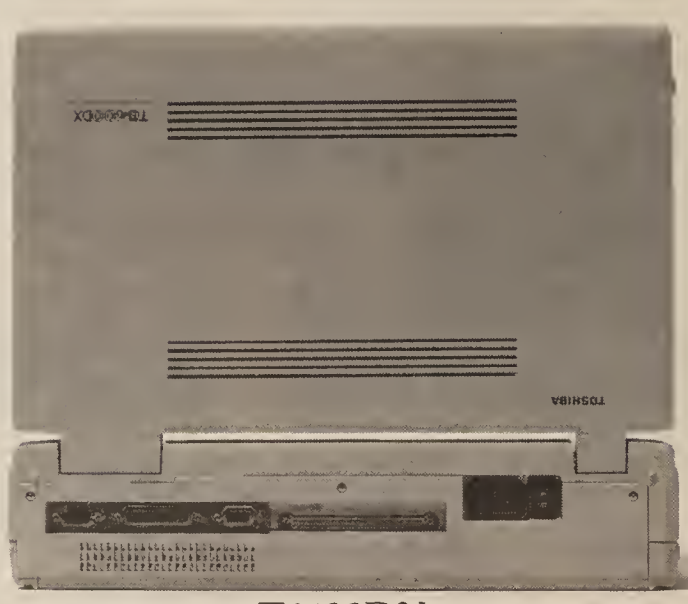
I have a right to be heard. We are the users. We will choose who will survive or perish. We are the supreme court, the ultimate judges. And we will be heard. Not in local bulletin boards or user groups. Not in developer-dependant forums. Not in vendor-sponsored trade shows. The strength of our commitment will be a force that will be felt. We can change the world.

Are you with me? Together, we can make a difference.

Golick is a consultant and trainer based in Montreal.

We make the most complete
And we stand behind

When your job description includes buying portable computers by the tens, twenties, thirties and hundreds, you naturally want to know a bit more about the company that makes those computers than you'll discover by reading their spec sheets.



T6400DX

(Although our spec sheets do make excellent reading.)

T2200SX

For example, we thought you might like to know that in the sometimes here-today, gone-tomorrow world of personal computer companies, Toshiba is the market leader in portables—part of a $33 billion company with an R&D budget larger than most companies' annual revenues.

Not only do we sell more portable computers, we make the most complete line of portable computers, designed to meet every conceivable need. From our 5.5-pound T2200SX business notebook that fits sideways into half a briefcase to our remarkable new T4400SXC, the first 486 active matrix color notebook computer on the market.

T3300SL/120MB

Each portable computer in our line has been engineered for easy integration into your existing system—providing all the important ports you need, in addition to the unique expandability option of our DeskStation IV, which comes complete with everything necessary to turn your Toshiba portable into a desktop computer.

T6400SXC

We also provide the broadest range of accessories—adapters, modems, memory cards—to make your portables (amazing as it sounds) even more useful.

© 1992 Toshiba America Information Systems, Inc. The Intel Inside logo is a trademark of Intel Corporation.

line of portable computers. every one of them.

T4400SXC

Of course, one of your principal concerns is reliability. Fortunately for you, it's also one of ours. That's why we've always gotten consistently high marks for reliability. (Just ask our hundreds of thousands of satisfied users.)

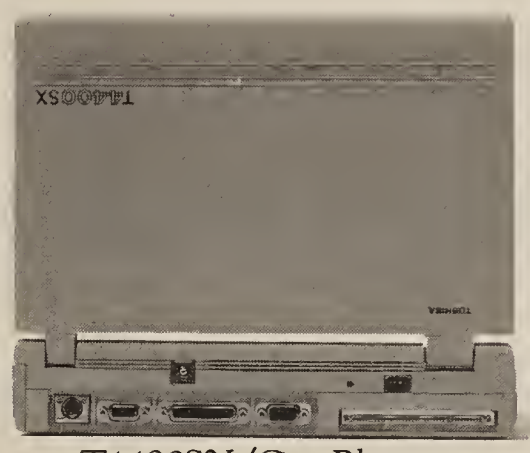
In the event that you do need service, we provide the kind of support you'd expect from a company like Toshiba.

T3300SL/80 MB

For example, every one of our portables comes with our standard international warranty, covering parts and labor for one year in 24 countries worldwide.

T6400SX

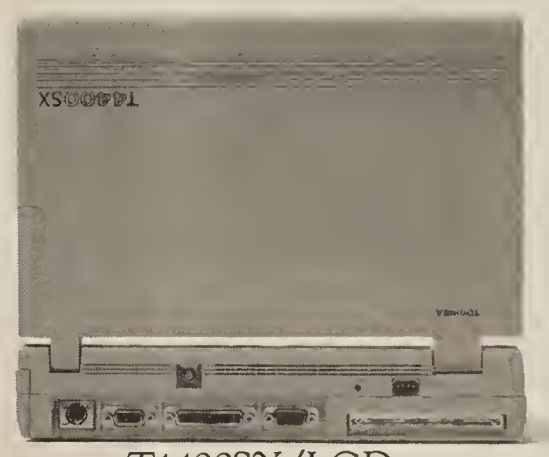
We also offer a 7-day/24-hour electronic bulletin board, providing access to Toshiba technical support as well as to utilities that can enhance your computer's performance.



T4400SX/Gas Plasma

On-line telephone support and assistance from Toshiba technicians are always just an 800 number away.

There's even an 800 number for the international traveler.



T4400SX/LCD

In fact, there's even an 800 number for you, right now, today.

It's 1-800-289-1400. Just call and we'll be glad to send you more information. Or arrange for an evaluation of your needs. Or refer you to your nearest Toshiba dealer.

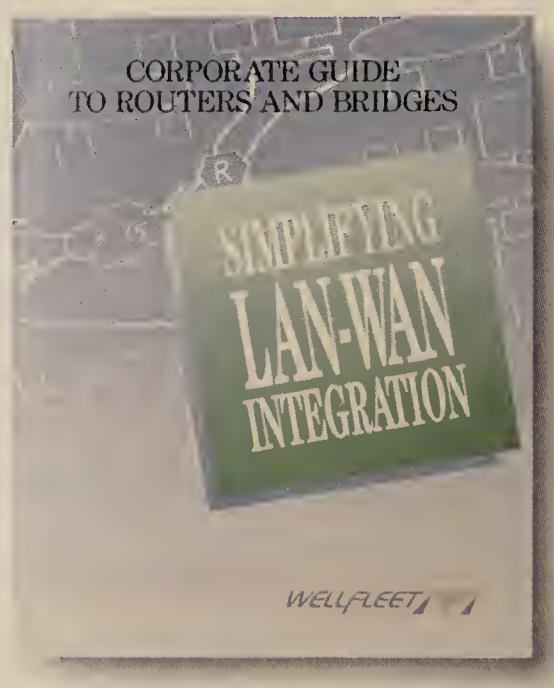
intel inside

Which, after everything we've told you, does seem like the logical next step.

In Touch with Tomorrow

TOSHIBA

You've Really Got To Hand It To Any IS Professional Who Wants To Understand LAN/WAN Integration.



After all, internetworking is a challenging subject – especially if it's not your primary focus. Fortunately, Wellfleet has produced a comprehensive guide that removes the mystery from internetworking. The guide is perfect for anyone who wants to gain a more thorough understanding of routers and bridges, communications protocols, internetwork design and cost-justification, and selection criteria. Call **1-800-448-3400, Ext. 499W** for a free copy, or to send a complimentary copy to a colleague. Whether you're an internetworking expert or novice, it's sure to come in handy.

WELLFLEET communications

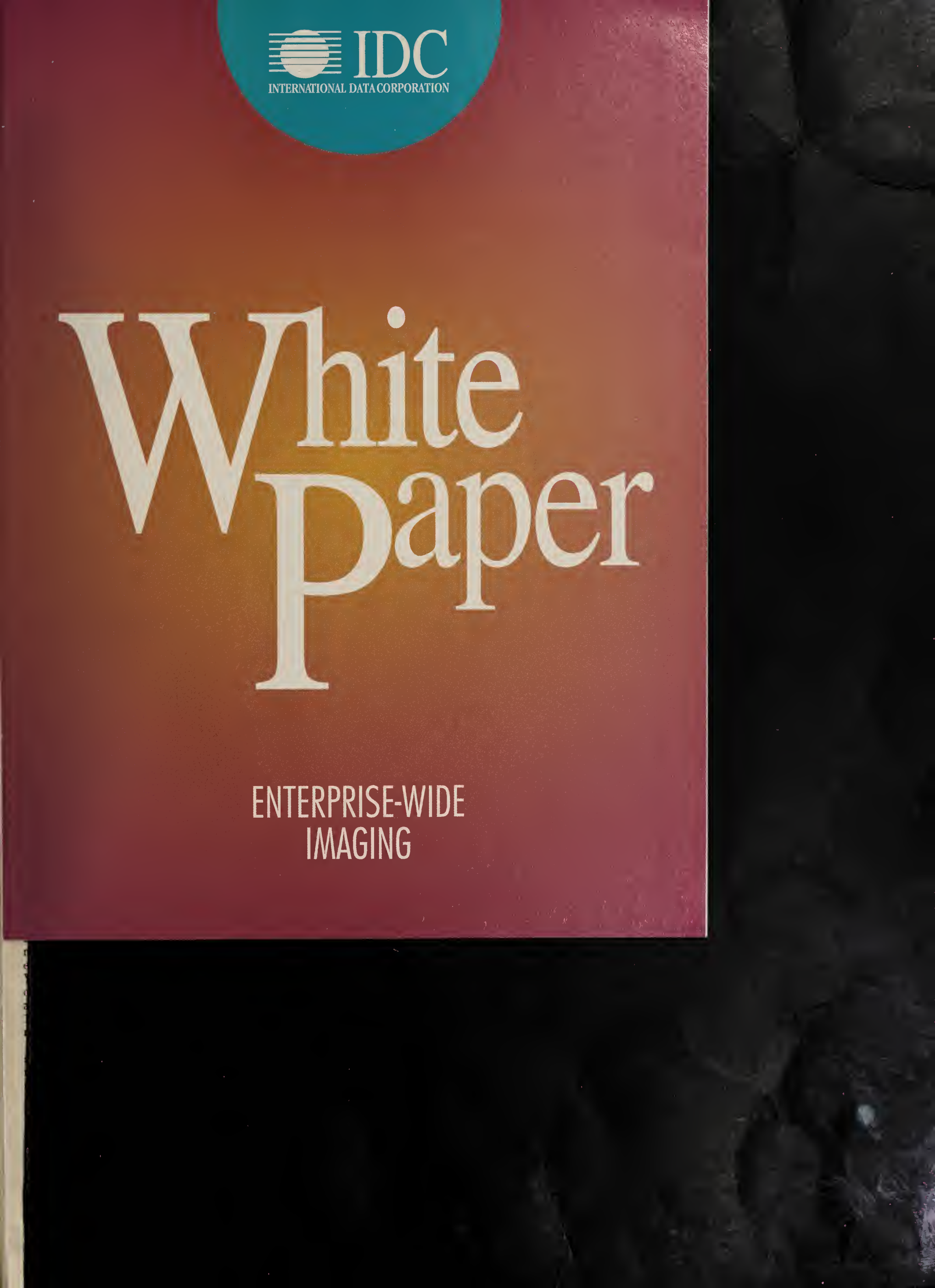
When Your Networks Are Complex, Your Choice Is Simple.

© 1992 Wellfleet Communications Inc. 15 Crosby Drive Bedford, MA 01730-1401. All rights reserved.

IDC
INTERNATIONAL DATA CORPORATION

White Paper

ENTERPRISE-WIDE IMAGING



WANG MAKES IMAGING EASY.

Wang imaging solutions are easy to use, easy to implement, and easy to afford.

EASY TO USE.

Wang imaging solutions let you focus on the task, not the technology. We put the power of imaging at your fingertips, enhancing the applications that your organization depends on every day without requiring extensive retraining of users.

"I NEED IMAGING THAT ADAPTS EASILY TO OUR EXISTING SYSTEMS."
MIS MANAGER

EASY TO IMPLEMENT.

Wang imaging solutions run on the widest range of platforms in the industry — PCs, LANs, mid-range systems, mainframes, even the premier RISC platform running IBM's AIX® operating system. This means your developers continue to work with the environment and languages that they know. And Wang offers a wide selection of off-the-shelf imaging applications, making implementation easier than ever before.

EASY TO AFFORD.

Wang imaging lets you make the most of your existing investments in hardware, software, and staff expertise. And with Wang imaging, you can image-enable your existing applications, building on the foundation that you already have.

"WE NEED IMAGING THAT'S EASY TO USE."
DEPARTMENTAL MANAGEMENT

IT'S AN EASY DECISION.

No one can match Wang imaging when it comes to ease of use, flexibility, and cost-effectiveness. It's all part of our OFFICE 2000 strategy dedicated to helping organizations improve quality and productivity in the office.

So talk to the leader in imaging. Call 1-800-TEL-WANG and let us prove it to you.

© Copyright 1992 Wang Laboratories, Inc. IBM and AIX are registered trademarks of International Business Machines Corporation.

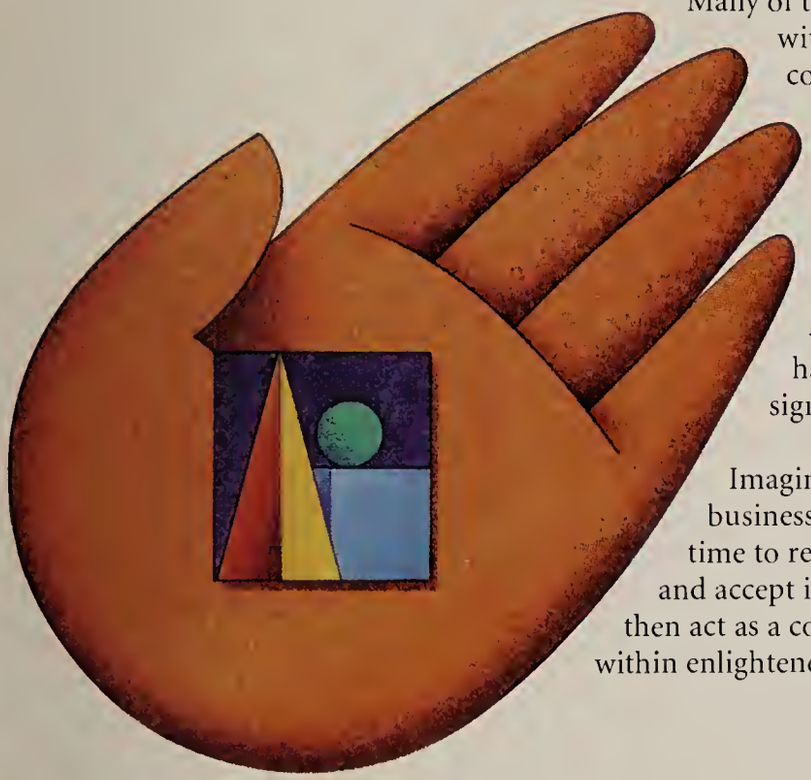
WANG **OFFICES THAT WORK**

Introduction

Image processing is a critical technology for many companies seeking a competitive edge, and enterprise-wide imaging is already playing a crucial role in some of the world's most successful companies. Despite its advantages, however, imaging has still not established a widespread presence in the U.S. business community. Even though it has gained more acceptance in foreign countries, it still has not fulfilled the hyperbolic claims made in its behalf.

Anemic economic conditions have certainly played a significant role in suppressing the growth of imaging. Although its potential is alluring, its price tag may be daunting. No promise of profits down the road can put nonexistent funds into capital budgets, and the future is now for businesses with their eyes locked on the bottom line.

Information Systems (IS) departments are among those hardest hit by the economic downturn. Frequently denied even the opportunity to have input on hardware and software buying decisions, they are unable to demonstrate the value they can add with imaging if given the chance. As a result, imaging and other new technologies such as reengineering, workflow software and groupware can languish unused.



Many of the negative aspects associated with imaging have been overcome. Networks and image compression schemes are now largely standardized. Further, the price per seat has dropped from $100,000-plus in 1985 to $20,000 in 1992. And the cost per transaction — a truer indication of cost — has dropped even more significantly.

Imaging will flourish when the business community realizes that it is time to reexamine its outdated mores and accept internal change. Imaging can then act as a complimentary technology within enlightened organizations.

This White Paper was written independently of the Computerworld editorial department by Scott McCready, Director, Image Systems with IDC.

For more information on the White Paper Program, please call 508-879-0700.

ENTERPRISE-WIDE IMAGING

IS professionals at home and abroad are under siege. Budgets in many cases are flat if not declining, and the IS influence over IS-related expenditures has been showing a marked decline in recent years. Many companies are throwing around terms such as outsourcing, downsizing and reengineering, in many cases with little thought. Given these difficult times, it is not surprising that many IS professionals simply do not have the time or energy to cope with new technologies such as imaging, workflow software, groupware, et al.

"It's difficult to take a long-term strategic perspective on technology when the alligators are already in your swimming pool," is the way one IS manager describes his inability to plan for imaging. He is not alone. A worldwide study of 5,000 IS professionals conducted by IDC's Worldwide IT Customer Directions and Strategies Group shows that only 14.2% of IS professionals in the U.S. and 12.6% worldwide intend to implement any significant type of imaging capability in 1992.

Despite this modest forecast, cost-conscious user-company top management must understand that imaging, when combined with a more enlightened approach to business practices in

general, can lift companies into a stronger competitive position. Effecting this kind of fundamental change in the traditional business psyche is difficult at best.

There are several arguments IS professionals give for not implementing imaging:

- Unless imaging can be implemented on an enterprise-wide basis it is difficult to justify the investment from a financial or architectural perspective
- Until imaging is available from system vendors, IS professionals cannot afford to invest significant resources
- On a cost-per-seat basis, imaging is simply too expensive
- Until there is a broad-based set of standards, imaging is too expensive to acquire, maintain and support
- Imaging is only good for specific departments and the onus is on them to interface with IS
- Imaging is flashy while microform technology is cheaper and legally acceptable.

Now that imaging is commonly based on standard networks, uses PCs without any specialized hardware boards, and is available from IBM, DEC, NCR and other leading vendors, the IS justification for not employing imaging on a broad-scale is eroding. Cost/seat prices have fallen from $100,000/seat in 1985 to generally less than $20,000/seat in 1992. Cost per transaction (a truer measure of cost) has fallen even more significantly over time.

The lack of specific ISO and de facto imaging standards is no longer a solid reason for not implementing image systems. There are CCITT Group 3 and 4 standards for compressing images, and many of the de facto standards used in the IS world — SNA, DECnet, etc. — are equally applicable to imaging.

IDC/Avante also believes the issue of imaging versus microform is moot. Microform is a valid technology for the long-term storage and retrieval of documents, and as such will be useful into the 21st century. Imaging is a less expensive way to process documents when they are in their active life cycle. Therefore, imaging and microform technology should be able to co-exist as part of a migration pattern in which active documents processed by imaging gradually become less active, or age to the point where it makes sense to store them on microform.

This is not to say that imaging is not effective in a file and retrieval mode, but retrieval rates have to be relatively high to justify the additional costs associated with imaging technology.

The primary remaining impediment to not implementing imaging concerns its applicability to a limited set of line-of-business activities. This is not a weakness but indeed a strength.

Imaging tends to yield the highest paybacks in industry-specific line-of-business activities. For example, insurance companies obtain optimal results by automating underwriting or claims processing functions. Banks typically benefit most from employing imaging in a mortgage loan servicing or credit card correspondence environment.

The challenge for IS is to find out which business problems respond best to imaging, and then implement imaging before the particular line of business installs its own maverick imaging system. In such a dynamic environment, the enterprise-wide IS architecture may be put at some risk. It is thus incumbent upon IS departments to become knowledgeable about their companies' business operations at increasingly lower organizational levels.

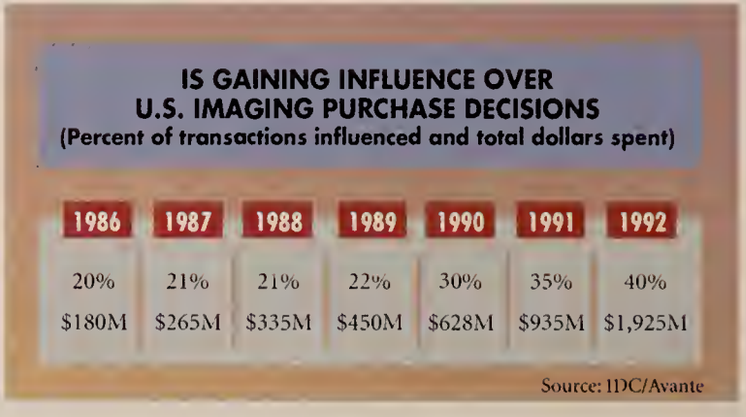
Imaging and associated technologies such as workflow software and groupware can propel IS into a position of prominence.

THE ERODING IS POSITION

The trends of downsizing and outsourcing could not have happened at a worse possible time for IS professionals. Not only are they losing resources, but many IS shops are maintaining business applications that are 20 years old or older, and doing so without the promise of increased funds for support and maintenance. The problem is exacerbated because PCs and LAN purchases are eating into IS budgets dramatically. As the keeper of the enterprise-wide architecture, IS has been required to support an ever-divergent group of users requiring PC and LAN support, and demanding expensive departmental systems such as imaging.

Further, with desktop computers becoming as powerful as mainframes were 10 years ago, it is increasingly difficult to argue for a host-centric, central-control approach to automation. Client/server architectures are marching forth and the commodity pricing of computer power at the desktop and server levels shows no evidence of slowing. Therefore, the role of centralized IS departments will decrease as more and more companies refuse to write new mainframe applications, and more technologies such as imaging and OCR are put on networks. Add to this the pressure for open and standard systems, and it is easy to understand why IS is under siege.

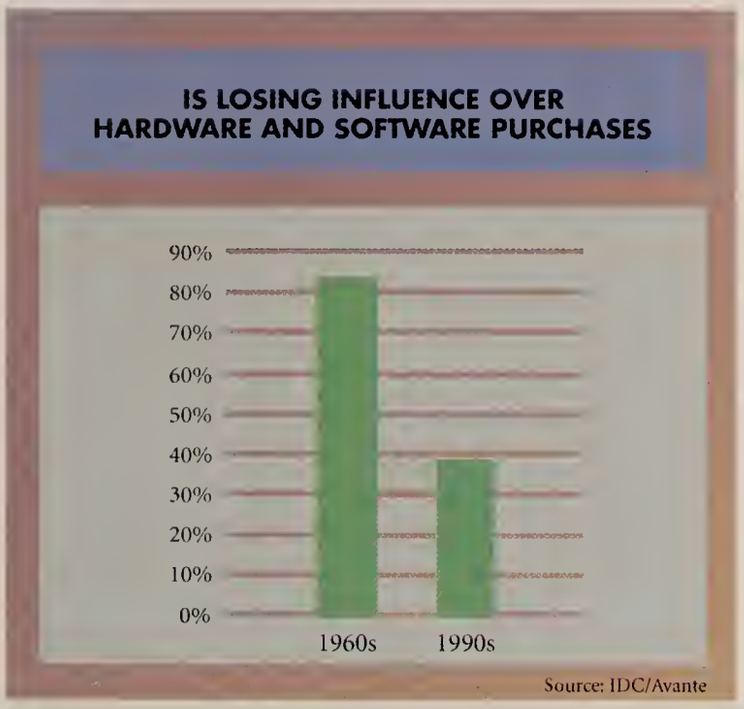
On the bright side, the combination of PCs, LANs and existing network backbones creates the infrastructure IS requires to take its rightfully prominent place in corporate and organizational structures.



Although IS is increasingly gaining power in imaging system purchases, it is still left out of 60% of these critical transactions.

TROUBLE IN THE BUSINESS WORLD

How many people have not heard the term reengineering? Not many. But how many really understand what it entails? The common perception of reengineering is that of gut-wrenching change in business systems and a whole new set of business applications that must be written or rewritten. The fact that business systems were not engineered in the first place hardly seems to matter to senior management hell-bent on reengineering their businesses. What does matter is that more and more businesses are recognizing the need to change.



Even though IS is slowly exerting more influence on imaging system purchases, it is losing its overall clout on major technology acquisitions.

There are several business factors that suggest that all is not well in the business world:

- The quest for Total Quality Management (TQM) is rapidly becoming a national obsession
- There is an increasing focus on the top-line (market share, revenue growth) as opposed to the bottom line (profit)
- Commodity pricing for PCs, LANs and servers means that the system vendors cannot afford to do business as usual. The major vendors face many of the same issues confronting IS
- Only through a continuous improvement program (CIP) can companies raise customer service levels and product quality while reducing costs and empowering employees.

IS ENTERPRISE-WIDE IMAGING REALISTIC?

Given the transformations taking place in the IS function, is it reasonable to expect IS to envision and implement an enterprise-wide imaging environment? Perhaps more to the point, does it make good business sense? There is a three-part answer to these questions. An economic response, an organizational or logistical response, and a technical response.

Economically, it may make sense for some companies to employ imaging from an enterprise-wide perspective. The economic argument in some cases may be based on the ability to provide a new product or service that would not be possible without the use of image technology. However, for most companies the capital outlay for an enterprise-wide system must be spread over several years. Since most users must cost-justify the acquisition of image technology, this commonly limits imaging as an all-pervasive data type. Consequently, image technology has been limited to those areas where well-documented financial return was possible. Despite this trend, the shift from imaging in line-of-business applications to enterprise-wide use is slowly taking place.

Part of the reason for starting small may be attributed to simple economics, but certainly the limitations of the technology — most notably, its limitation to a single database domain — and the complexities of completing the necessary up-front analysis have also contributed significantly to the departmental adoption approach of image users.

Organizationally, the hurdles of employing imaging technology on an enterprise-wide basis are formidable. In these lean fiscal times, the frequent senior management philosophy is, "If you are going to fail, make sure you fail small." That is why the first imaging project is often in the area of a company where failure has no price and success has little or no impact. These initial imaging projects are also frequently not transferrable to other areas of the enterprise.

The organizational issues, more than the economic or technical considerations, pose the biggest obstacles to enterprise-wide imaging.

Technically, enterprise-wide imaging is possible. The challenge for vendors and users goes beyond connecting disparate computer architectures, or employing standard and open systems. The challenge is separating those vendors with connectivity from those vendors that can layer an appropriate product set on top of the existing information processing infrastructure.

Most imaging users are automating the paper process. Since paper transactions cross not only LANs and wide-area networks (WANs) and in many cases countries, users need an architecture that not only allows transactions to flow freely but also can track and control transactions. This is where most enterprise-wide efforts begin to fall apart.

The other problem is that image systems tend to be bought and implemented in a helter-skelter fashion by various lines of business. Without some degree of IS coordination, many companies will rapidly acquire imaging systems from several vendors, thereby complicating the drive towards an enterprise-wide capability.

Enterprise-wide imaging involves

more than simply integrating disparate computer architectures. It also requires access and customized views of the associated data and images. The definition of enterprise-wide access is not complex. Once a specific business function is automated with imaging technology, people beyond the newly automated department can also benefit from the imaging database. Therefore, it is necessary to find an economical method that provides casual access to this new database resource. This casual access should involve a consistent front-end that shields the user from the native interfaces.

Providing an enterprise-wide imaging system requires the use of sophisticated folder software, which allows users to view data and associated images for multiple management functions without storing the data and images multiple times.

SAMPLING OF ENTERPRISE-WIDE IMAGING SYSTEMS IN THE U.S.

Vendor	Workstations	Customer	Application
Sigma Imaging Systems	1,650	Empire BC/BS	Multiple
FileNet	175	Chemical Bank	Multiple
FileNet	200+	Phillips Petro	Accounting
IBM	<50	D. B. Kelly	Photo Inspection Records
IBM	1,500+	USAA	Claims Processing
IBM	1,000+	WCB of Ontario	Claims

Source: IDC/Avante

There is still a limited number of enterprise-wide imaging systems.

Most of the system vendors, such as IBM and Digital Equipment, offer imaging based on their existing strategic architectures. For database management systems, this means Rdb and DB2. Networking is based on DECnet and SNA. The imaging system vendors are also catering to standards by supporting common databases, such as those available from Oracle and Sybase. 3COM and Novell are the most prominent network operating system companies. Interactive multiwindow desktop interoperability is commonly offered through Dynamic Data Exchange (DDE) under MS Windows 3.0.

"Without some degree of IS coordination, many companies will rapidly acquire imaging systems from several vendors, thereby complicating the drive towards an enterprise-wide capability."

Currently, no single vendor offers true one-stop shopping. The system vendors are trying to address standards. When it comes to workflow software, they fail to understand it from an application and system-resource perspective. The image vendors are closing in on workflow software application solutions, but they are not large enough to convince many large corporations to view them as significant automation suppliers.

THREE ORGANIZATIONAL MODELS

Enterprise-wide imaging systems generally reflect one of three organizational models. The first model is the traditional view. This model has a large number of workstations, is normally constructed with conscious architectural considerations, and is usually compliant with evolving standards such as those proposed by the ISO's Open Systems Interconnect model.

The second model of enterprise-wide architectures reflects the software changes IDC/Avante believes must happen if users are to widely implement imaging. These changes imply the use of folder software to present individual views of the data and images while only storing and manipulating one set.

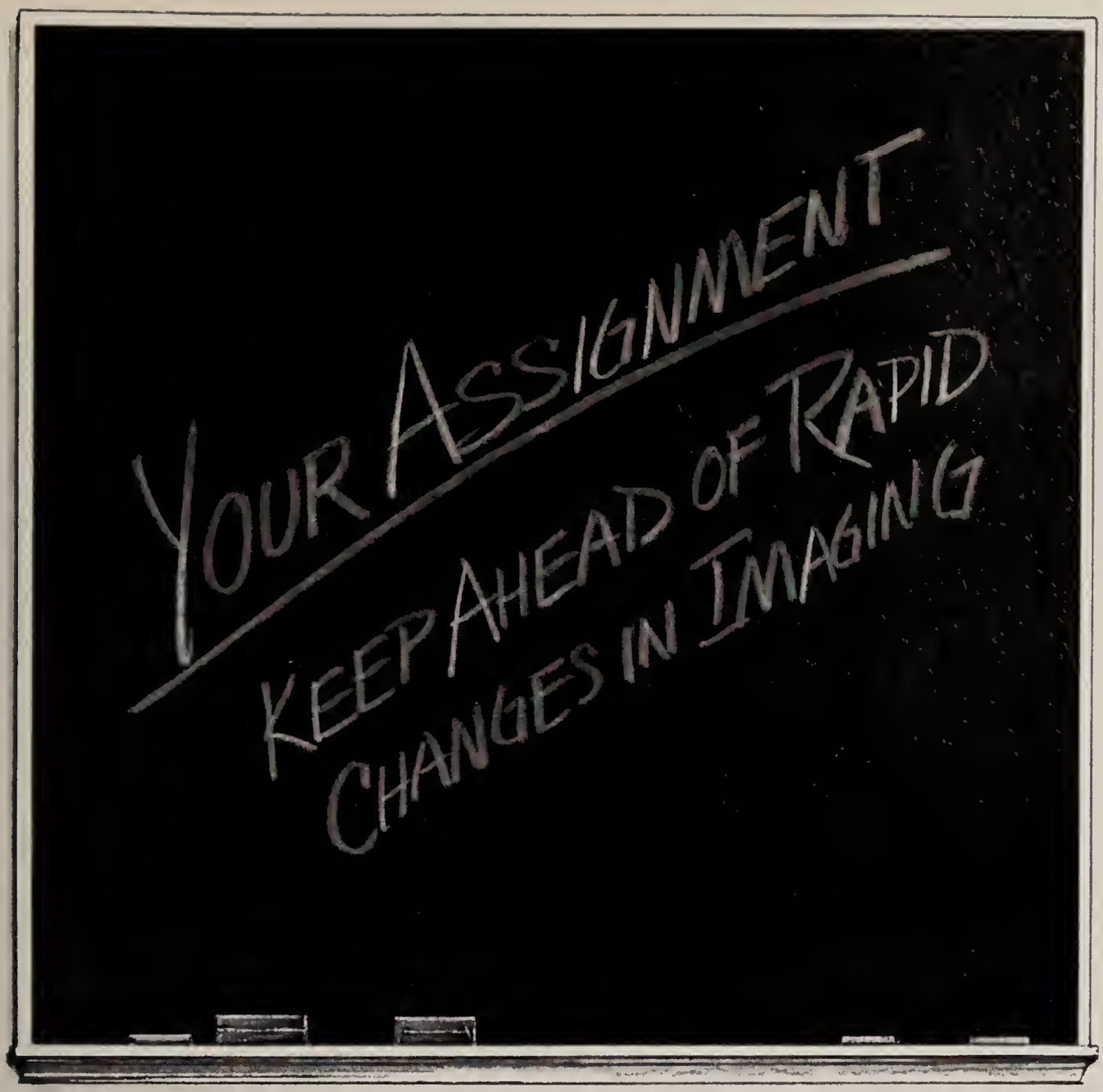
The third model is based on the premise that the concept of the enterprise is expanding to include not only the user company, but its suppliers, agents, customers and government. All of these groups may be found in a single image implementation.

Today, many vendors and users alike are stuck with the traditional model of enterprise-wide imaging. However, IDC/Avante sees a definite trend towards the second model, particularly in the insurance and healthcare industries. The third model is more applicable to truly innovative companies, mostly found in the financial sector.

VENDOR APPROACHES

Sigma Imaging Systems is one vendor that preaches the gospel of distributed processing and central records control. It strives to leverage its systems at all levels while offering the ability to expand systems incrementally without having to add gigabytes of storage or make other dramatic changes. Sigma has implemented a system at Empire Blue Cross/Blue Shield with these central concepts in mind. The system features 23 Kodak ImageLink 9000 scanners, processes 100,000 documents/day, includes six jukeboxes at three sites: Albany, N.Y., New York City and Yorkstown, N.Y.

The system automates multiple lines of business: medicare, a dedicated state service center and claims processing. The single catalog of images and the various jukeboxes communicate over an SNA network that links all sites. Work-



ATTEND THESE UPCOMING AIIM EDUCATIONAL EVENTS

Electronic Imaging for Systems Analysts: Feasibility, Requirements, and Justification
October 26-27, Chicago, IL
November 16-17, Los Angeles, CA

Imaging User Forums
November 19-20, Chicago, IL
December 3-4, New York, NY

Executive Seminar on Electronic Image Management
December 2, New York, NY

For more information, or to register for these events, call the Education Department at 301-587-8202.

AIIM
ASSOCIATION FOR INFORMATION AND IMAGE MANAGEMENT

YOUR IMAGING CONNECTION

Sharpen your edge.

IBM imaging systems can

While some people view imaging systems as just document storing tools, others view them as something much more powerful.

Strategic tools.

Take the Auto Club of Southern California. With 140 people filing 34,000 documents a day in 21 *miles* of folders, paper gridlock resulted.

"Customer files used to be very inaccessible, sometimes 40 miles away," they told us.

We suggested ImagePlus,® IBM's imaging offering for work process management. In short, they projected savings of $2 million per year by

IBM and ImagePlus are registered trademarks of International Business Machines Corporation. © 1992 IBM Corp.

elp you compete in many ways. None of them dull.

3—and already they're ahead of schedule.
They later added, "ImagePlus let us respond
ur day-to-day customers—immediately."
In finance, take the example of Massachu-
s Financial Services, which supervises $28
on in assets for over one million investors.
In less than two years they slashed workflow
s 55% by gradually changing from their
teful paper chase, to ImagePlus. As for pro-
tivity, it jumped 20%.
We have dozens of examples, but all com-
ıt on two major capabilities: The fact that ImagePlus is designed to integrate with systems you're already using—from PCs to mainframes.

And that, together with our specialized consultants and network of Business Partners, we can tailor the best hardware, software and consulting services to fit your exact needs.

From insurance and banking to public and health services, IBM imaging technology, can help sharpen virtually any industry around the world.

To spark your interest even further, give us a call:

1 800 IBM-6676, ext. 739.

IBM®

The Productivity Advantage

Imaging – the storage and manipulation of documents electronically or on microfilm enables businesses to radically reshape the way they function.

Organizations that deal with checks, insurance claims, legal records, engineering drawings, or simply extensive correspondence can realize significant competitive advantage utilizing imaging systems.

Discover the state of the art at IMC Document Imaging 92, the conference and exposition of Europe.

From September 14-16, Berlin's International Conference Center will host a gathering of key vendors and experienced users of imaging products and services. See solutions in action at the exposition. Profit from the experience of knowledgeable experts at the conference.

For more information, call, write or fax:

World Headquarters
1650 38th Street/Suite 205W
Boulder, Colorado 80301-2638 USA
Tel. (303) 440-7085
Fax (303) 440-7234

CPO Hanser Service GmbH
Schaumburgallee 12
D-1000 Berlin 19
Tel: +30/3 05-31 31
Fax: +30/3 05/73 91

IMC *Document Imaging 92*

14-16 September · International Congress Center · Berlin

The IS Call to Arms — 11 Steps to Change

Unless there is a general call to arms, IS will become a simple maintenance function with some network caretaker services provided by specialists. It will have no opportunity to add value or make critical decisions. The call to arms should include several elements. In order to fulfill them, IS professionals must:

1. Understand the business environments of their companies and determine the appropriate mix of technologies to accommodate those environments.

2. Fully leverage existing IS infrastructures.

3. Recognize that IBM and Digital will be the network providers of choice, while imaging, workflow software and groupware will more than likely come from companies such as Lotus, Plexus, FileNet, Action Technologies, Wang and Computron.

4. Recognize that outmoded development environments must go. Hard coding imaging solutions simply recreate nightmarish support and maintenance scenarios. Instead, users should use automation efforts to ensure that the workflow process is isolated from the business application, and eventually from the data application. The goal is to change the workflow without negatively impacting other processes.

5. Beware of vendors offering a new lease on life through image-enabling legacy applications. This may be a suitable migration strategy for some, but it may leave others in a technology purgatory between the old and new worlds.

6. Break down the communication gap between IS professionals and business people.

7. Be aggressive with major computer suppliers. IS must demand that the system vendors alone, or in partnership, provide the appropriate products and services needed to get IS out of their legacy environments.

8. Implement imaging with an enterprise-wide view in mind while being mindful of the changes enterprises are experiencing.

9. Understand that imaging and the issues associated with imaging are typical of the organizational and technological issues that IS will be confronted with in the next ten years.

10. Shift IS expenditures away from processing transactions and toward automating people and the relationships between them.

11. Recognize that we are in a unique point in automation history. The competitive battleground is not simply quality or the time required to get to market. Instead, the competitive battleground is based on creating value, which, in the words of Russell Redenbaugh, Chairman of Action Technologies, is "the new coin of the realm." As such, we are not so much automating the flow of paper or data. What we are really talking about is an overall automation environment that allows systems to allocate resources dynamically.

in-progress is distributed on OS/2-based systems, but the image catalog — which contains 22 million documents — is on an IBM ES/9000.

FileNet Corp. considers its implementation at Chemical Bank in New York City to be an enterprise-wide system. According to FileNet, the system currently includes two cities, five systems and nine applications. Its users share data and images in a variety of different ways. Application processing, charge-backs and customer service applications reside in one city while the users are in two cities. FileNet says the system qualifies as an enterprise-wide system based upon its having data available to a distributed set of people or multiple applications that may be co-located or distributed.

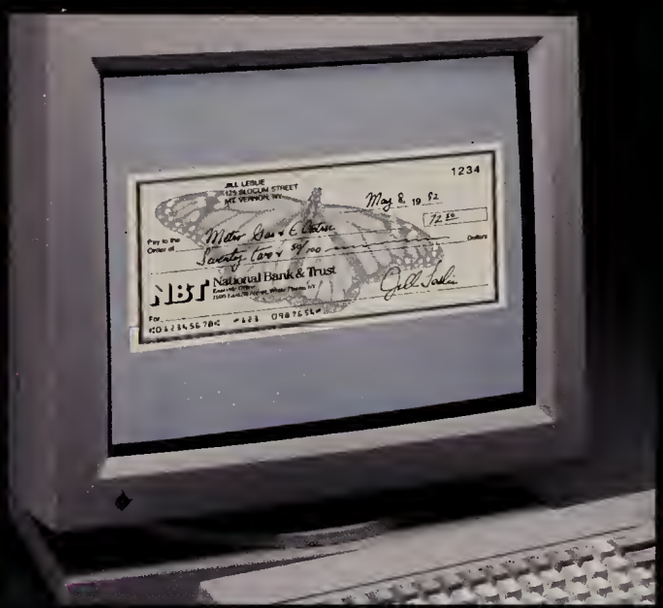
Wang Laboratories believes there are few, if any, image systems that are truly enterprise-wide. In fact, Wang argues there may not even be a demand for enterprise-wide systems in which anyone working in an organization has access to all information. With the exception of small and focused enterprises such as resume access in a recruitment environment, Wang believes the need for everyone to have access to all data is simply not required. Since there is a division of labor between departments, the company maintains that it is unlikely that one form of information has to be accessed by all groups.

Despite this position, however, Wang also believes it is very important for prospective imaging customers to consider the enterprise-wide imaging implications in their up-front analyses because it leads them into considering the possible impact of standards and the implications they may hold for future expanded imaging systems.

© Eastman Kodak Company, 2001

Document management is changing. The process can be wrenching and expensive. Or it can evolve the Kodak way: film or digital or both, at a pace to match your needs.

No one document management technology is likely to be all things to all businesses for all time. Kodak gives you choices, with options to change—with a "hybrid" strategy that puts you on the leading edge while retaining your investment in current technology. To see how Kodak can put imaging to work for your business, call 1 800 445-6325, Ext. 950M.



MANAGED BY KODAK

Imaging by all means

Kodak

Not surprisingly, IBM has done a lot of thinking about the issue of enterprise-wide systems. The company says enterprise-wide imaging has a lot more to do with the approach than with scale or scope of implementation. It cites a number of notable considerations, including the need for:

- Some element of work management
- An industrial-strength solution
- A conscious set of architectural elements.

THREE ENTERPRISE-WIDE SCENARIOS

IDC believes there are three possible scenarios for enterprise-wide imaging systems. While all three are different in definition they are certainly not mutually exclusive.

The first scenario includes hundreds of workstations as are found in implementations at USAA of Plano, Texas, and Putnam Investor Services of Quincy, Mass. These systems are absolute in scale, meaning the number of workstations they support can be expanded without limitation.

The second scenario is found in small companies where imaging is pervasive across the entire business. D.B. Kelly, which uses imaging to eliminate insurance fraud in the automobile inspection process, is an excellent example of this approach, which typically calls for fewer than 50 workstations. However, the ratio of workstations to employees is nearly one-to-one. D.B. Kelly is all the more remarkable because imaging allowed it to create a business that was not feasible without imaging.

A third scenario of enterprise-wide imaging comes into play when companies redefine their definition of the enterprise. IBM implemented an internal imaging system to handle customs documentation (IBM was the first company allowed by U.S. customs to destroy the original paper documents). Subsequently, the system is being expanded to include the customs brokers that handle IBM shipments at the different ports of entry.

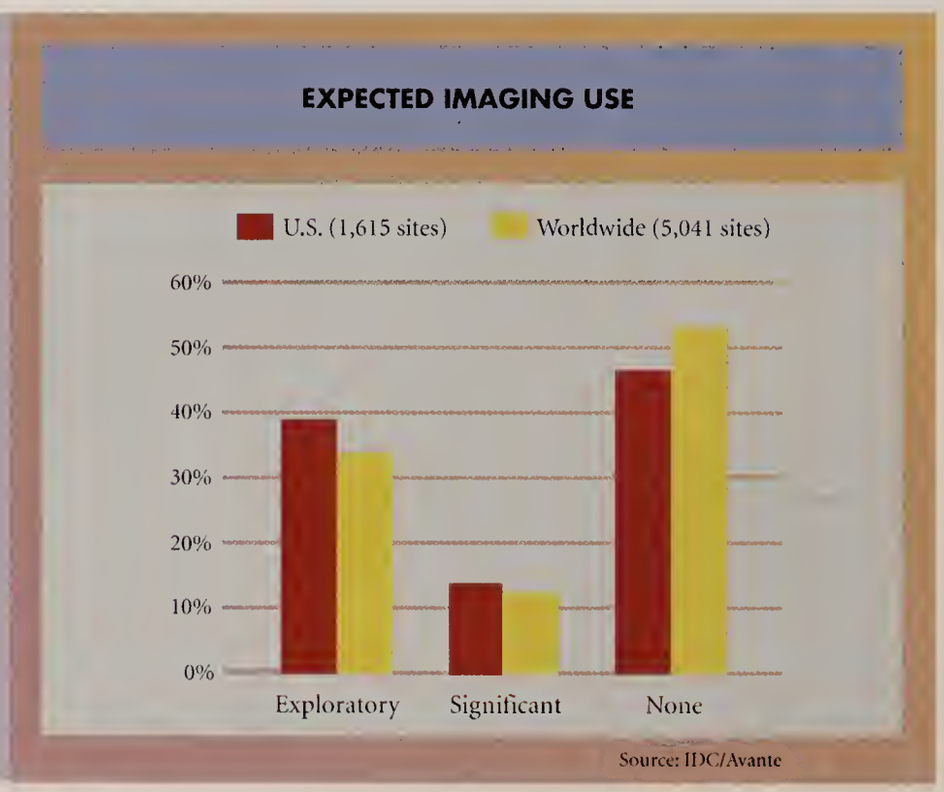
GLOBAL IMAGING IMPLICATIONS

IS managers in the U.S. are not alone in the struggle to place imaging, workflow software and groupware in perspective. As Europe marches toward a monetary union, many United Kingdom and European IS managers are also coming under intense pressure to provide a more seamless IS environment on an intercountry as well as an intracountry basis.

Despite the European unification efforts, however, it is a great mistake to perceive Europe as one market. The use and sophistication of imaging in various European countries is as varied as the business problems imaging solves in the U.S. For instance, Spain and Italy frequently implement file and retrieval applications, while Germany uses more workflow technology.

Far from being one market, Europe will remain a series of relatively unique markets well into the next century. Certainly the European Community (EC) simplifies many of the legal issues that U.S. companies must comply with in order to do business in Europe, but the driving factors behind the acquisition of new technology will still be different in each country.

As one European explained it, "We are all part of the EC but that does not mean we are similar or that we necessarily even like each other."



Users are cautiously committing themselves to imaging systems.

APPLICATION BRIEF

The State of Missouri, Employment Securities

This agency's job is to collect quarterly employment taxes. This means that once a quarter Employment Securities is literally deluged with thousands of checks. The result is that its processing cycle has huge peaks that last for 10 days.

Before implementing imaging, it took 10 days to pull the checks and get them to the bank. Anyone that was available from another department was requisitioned to pull checks because the state wanted to reduce float and make sure it could tell people that their payments had been received. It took approximately six weeks to get the information off the reports and get the basic

data into the agency's system. It then took another week to place the reports in numerical order. Eventually the reports were microfilmed, which took two more weeks.

The state's customer service representatives charged with replying to taxpayer inquiries did not have the necessary information until the end of the next quarter. Now, as soon as the check is pulled, the accompanying documents can be scanned and indexed. As a result, customer service has the information it needs within 48 hours of the check being pulled, and nine-to-ten weeks of waiting time is eliminated.

JAPANESE IMAGING MARKET SHARE BY INDUSTRY
$M
(Percent of dollars spent)

Industry	1992	1993	1994	1995
Banking	14%	17%	18%	20%
Insurance	7%	9%	11%	12%
Financial Services	6%	8%	9%	10%
Manufacturing	24%	25%	24%	24%
Transportation	5%	5%	6%	6%
Utilities	3%	3%	4%	4%
Government	21%	21%	20%	18%
Other	20%	12%	8%	6%

Source: IDC/Avante

Leading Japanese imaging users in the manufacturing and government sectors frequently rely on electronic filing cabinet applications.

APPLICATION BRIEF
State Retirement Fund, Illinois

The State Retirement Fund was being forced out of its location, which was a problem because it had several million paper documents stored in cardboard boxes and on shelves. The fund had a finite number of dollars to spend, and had to decide whether to build special storage space into its next building or change its paper process. It opted for the latter, acquiring an image system in advance of the move to the new building. It used the system solely for converting paper to images. As a result, on moving day, everything moved but the paper records.

APPLICATION BRIEF
State of Louisiana, Department of Public Safety

The State of Louisiana Department of Public Safety needed to supply information on drivers to many other agencies and departments. Problem drivers are a large part of that information, and tend to remain that way over time as they go in and out of the court system, amass police driving records and have their licenses revoked. Insurance company requests further compounded the state's information retrieval demands. In this environment, the state typically provides information to six outside organizations. Since placing this information on an imaging system, all files are readily available, and can be easily shipped across communication lines. The state's goal is to leverage imaging to the point where it no longer needs paper and microfilm, but can maintain information in an electronic folder. It also wants to include arrest histories — which are maintained separately from driving records — and mug shots in these electronic folders.

The state eventually wants this information to be accessible not only by the Department of Public Safety but by the court system and mobile units of the fire and police departments. The agency receives 12,000 pieces of documentation weekly, and has a 12-million-document backlog. So far, 2,000 terminals have been installed to fight the imaging battle.

APPLICATION BRIEF
American Republic Insurance Company

American Republic has $386 million in assets, $150 million in health premium income, $1.4 billion in current life insurance business and 200,000 policy holders. It installed an imaging system in order to bring a higher level of automation to its claims adjustment department in the health claims area. Currently this area handles 1,300 claims per day, which is a 25% increase in volume over last year.

American Republic estimates that its image system will save $1.25 million over the next five years on reduced staffing costs. An additional $48,000 is expected be saved in microfilm equipment and services.

SOME CHICKEN SCRATC
A DOODLE FROM PERSONN
THE IMAGING

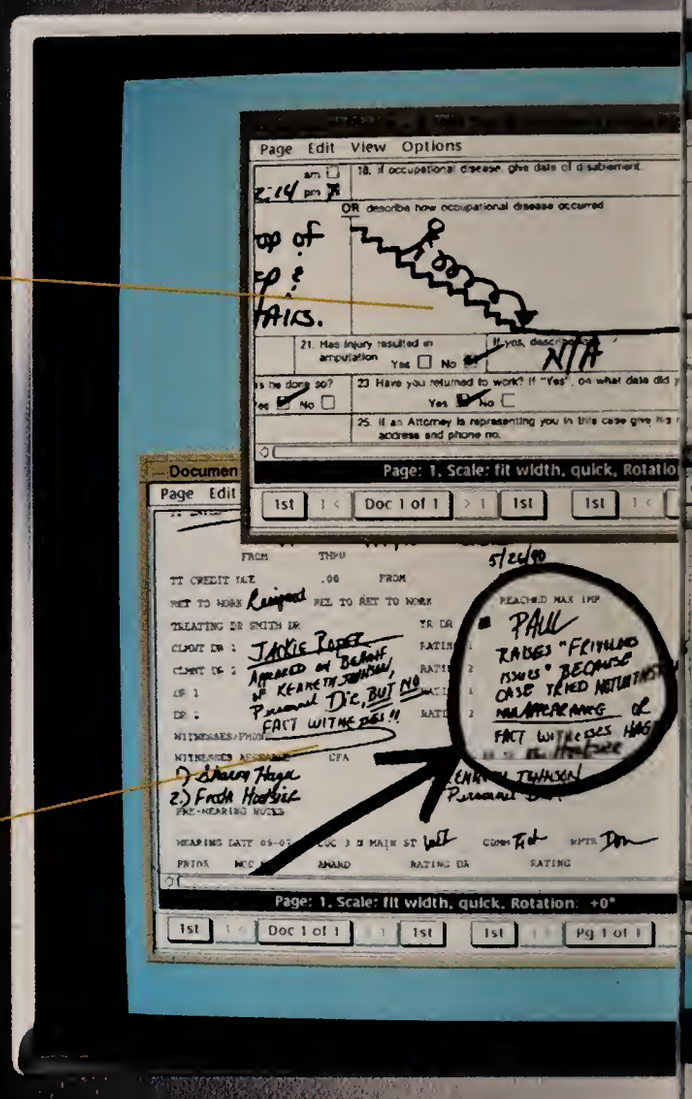
Different kinds of data in different formats all over your organization. From computer files to tattered manila folders. What happens when you need to access that information in order to settle a worker's claim, for example? Or if more than one person needs to review the same file at the same time?

Accident report stuck inside attorney's briefcase.

The answer is confusion. Wasted time. Lost resources. Low productivity.

Unless, of course, you have DECimage™ EXpress from Digital. A technology that lets you convert anything found in paper files – bills, forms, case reports or faxes – into computer images. Thus allowing you and everyone else in your organization to search for, gather and, most importantly, use information to make decisions.

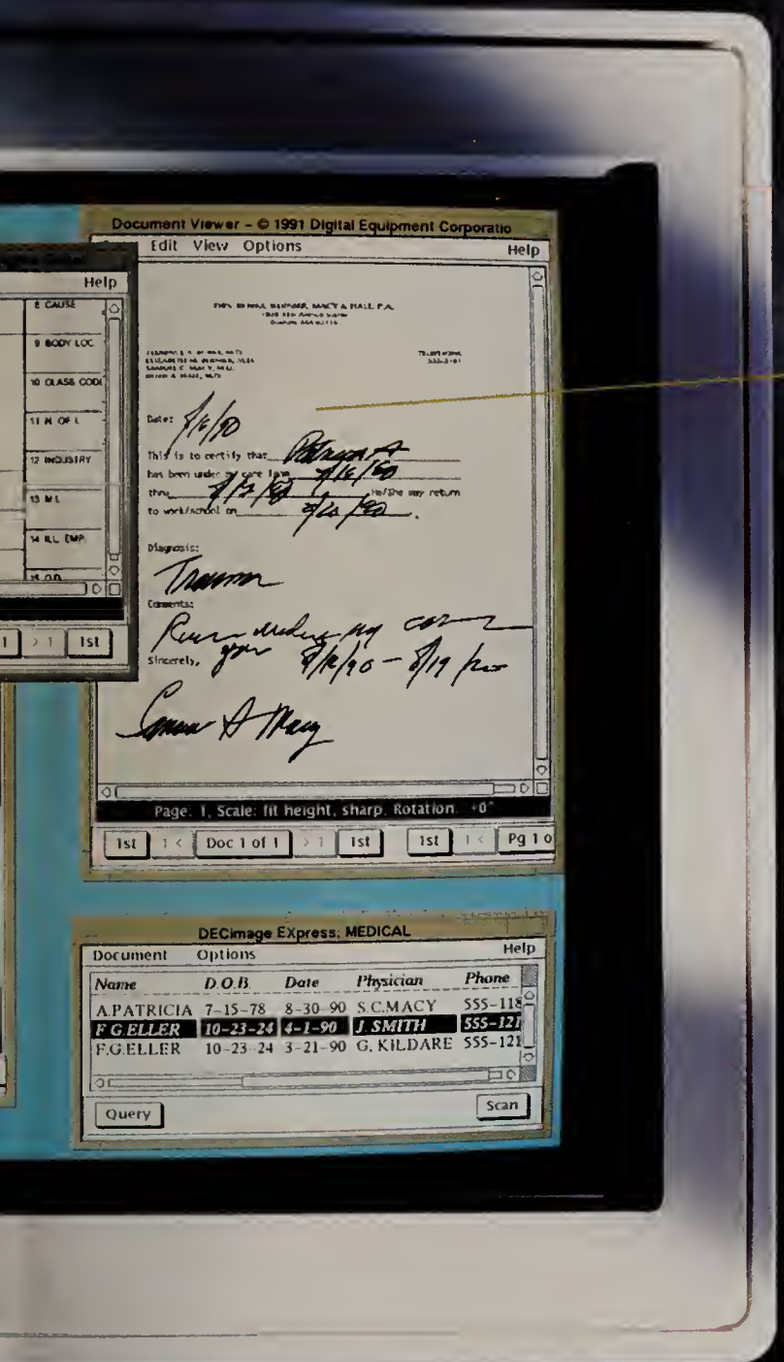
Claim form buried in personnel manager's in-box.



D I G I T A L. T H E

© 1992 DIGITAL EQUIPMENT CORPORATION. THE DIGITAL LOGO, DECimage AND DECimage EXpress ARE TRADEMARKS OF DIGITAL EQUIPMENT CORPORATION.

H FROM THE DOCTOR.
EL. A SKETCH FROM LEGAL.
FROM DIGITAL.



Note from doctor sitting in third-floor filing cabinet.

No matter where that information resides or how many systems you have.

With regard to a worker's claim, this means doctors and hospitals can be paid sooner (with fewer duplicate payments) and everyone served better.

Years of experience with systems solutions, hundreds of strong third-party relationships and our NAS (Network Application Support) technology have made DECimage EXpress possible. And they've given you the flexibility to start with a departmental solution, then grow as your needs do, adding virtually any new technology you need in the future.

DECimage EXpress from Digital. Call 1-800-DIGITAL, extension 049, for a free video that gives you the complete picture.

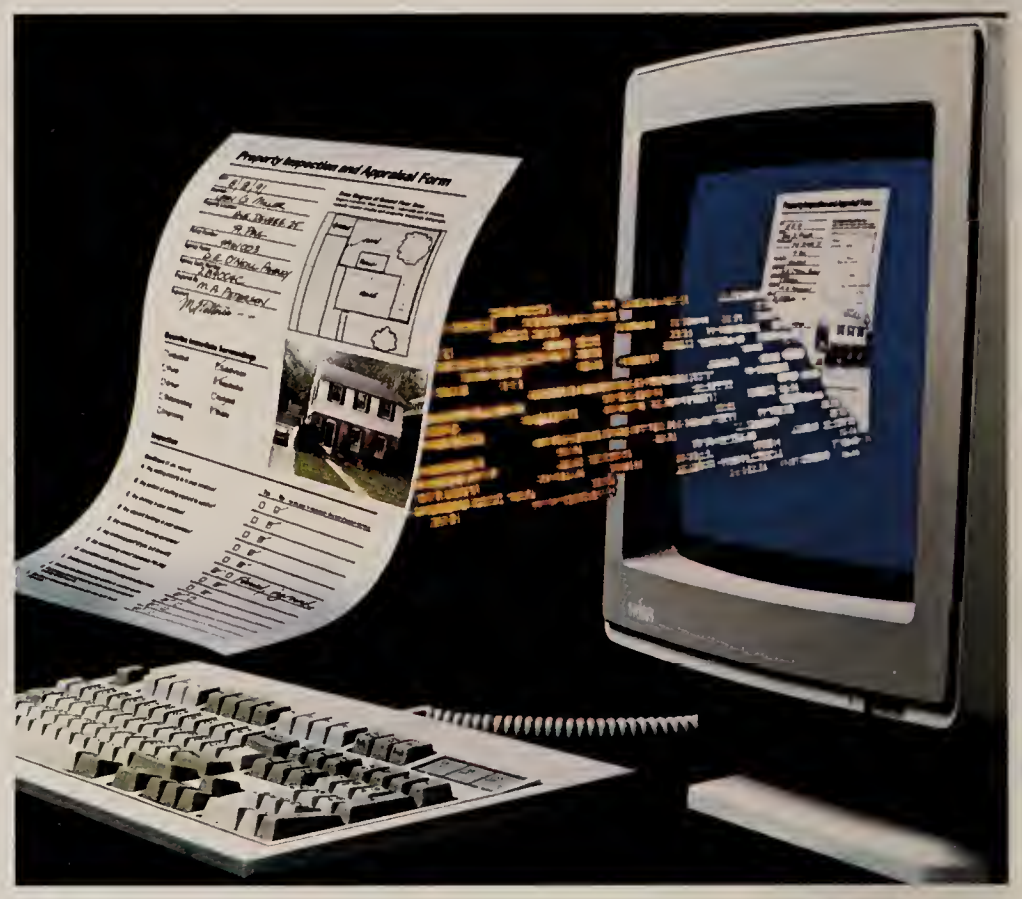
digital™

OPEN ADVANTAGE.

If an image is worth a thousand words, imagine what imaging is worth to you.

Your strategic picture. Like the strategic pictures of businesses and governments around the world, it's what Unisys had in mind when we designed our InfoImage family of imaging solutions.

The benefits go beyond savings from enhanced productivity. For InfoImage solutions not only enable you to capture documents electronically, move them throughout your enterprise, and gain simultaneous access to them. Whatever your business and whatever it's built on—checks or claims, correspondence or blueprints or signed authorizations—InfoImage solutions also help you create marketable, revenue-generating new services.



As a leader in imaging technology, we know that advanced solutions do not consist of technology for technology's sake. We begin with a careful understanding of the customer's needs and objectives. And our InfoImage Professional Services recognize that an imaging solution isn't a solution unless it's integrated into the customer's existing systems.

Whether you're in finance, government, travel, telecommunications or any other service industry, call us at 1-800-448-1424, ext. 139. Ask how our imaging solutions can help improve your business picture today.

UNISYS

We make it happen.

©1992 Unisys Corporation
InfoImage is a trademark of Unisys Corporation

COMMENTARY

Paul Gillin

View from the West

Notes from a recent West Coast swing:

Quattro Wow: If Borland's Quattro Pro for Windows s half as good as the demo I saw wo weeks ago, this is a product vorth waiting for. It is a lot nore than a spreadsheet. It has rue three-dimensional capabilties, a powerful graphics module nd a database interface that hould take full advantage of oth-r Borland products waiting in he wings.

What is most impressive bout Quattro Pro for Windows s its notebook metaphor. Picture your full year's worth of expense reports in a single 3-D olume with individual pages for ach week. You can run all inds of 3-D operations over hese pages and move them round by just grabbing a tab and ragging. The notebook also uts an end to those annoying ight-character file names. Up o 256 pages can be combined in single notebook.

Quattro Pro for Windows lso embeds graphics within the preadsheet and scales them so hat they're readable in whatev-r space you have to work with. The graphics module is awe-ome. A right-button click ives you a menu of graphics op-ions from anywhere within the raph, and you can scale and ro-ate 3-D graphs just about any way you want. You can even cus-omize backdrops and individ-al bars to fill them with bit-napped images for striking effect. The X-axis becomes the Y-axis with a single mouse click. And the menu buttons across the top — more than 150 of them — change to fit the mode you're working in.

The database desktop is a striking new concept. It lets you merge complex database queries with a spreadsheet front end, which cuts way down on screen development. You can even link bit-mapped graphics to database records and add things like buttons and scroll bars as a drag-and-drop operation.

Now here's the bad news. Borland has got problems. Quattro Pro for Windows

Continued on page 57

Move to GUI can put graphics to the test

BY CAROL HILDEBRAND
CW STAFF

With graphical user interfaces (GUI) currently hot out of the gates, many users looking to migrate to such operating environments as Windows or OS/2 are discovering that their hardware cannot pass muster. Not only is it a question of CPU, but a GUI also means a higher graphics hurdle to clear.

"GUIs are very hot, but there is a lot of demand put on the graphics by them," said Tom Ryan, executive director of the Video Electronics Standards Association (VESA).

Analysts said that users will want to consider the following display resolution and performance requirements for wide-open Windows capabilities:

• With chip manufacturers coming out with random-access memory-digital analog converter processors, which provide higher quality color, users are going to need better displays. Many analysts also insist that larger monitors are in order. Jon Peddie, publisher of "The PC Graphics Report" in Oakland, Calif., said that for a corporate Windows user, a 17-in. monitor with Extended VGA (1,024 by 768 resolution) would be necessary.

• The next performance enhancement is to use a graphics board that has bit block transfers (bitBLT). BitBLT takes the onus of moving things around on a screen off of the host processor and puts it on the graphics board, thus freeing the system from a time-consuming task. A similar enhancement is moving cursor support off of the host and onto the graphics board.

• Peddie also recommends having what he terms an input buffer, which allows the display board to take several instructions at once and hold them until the graphics board can process them, thus cutting down the use of the slow system bus.

• Another hot area right now is local-bus personal computers, in which the graphics board bypasses the system bus to speak directly to the host processor. With the clunky I/O bus out of the way, the speed increase is substantial.

The local-bus phenomenon has sparked a minitrend, with Epson America, Inc., Compaq Computer Corp. and Dell Computer Corp., among others, all coming out with proprietary versions of local-bus machines. This poses a problem to the board/chip manufacturers, International Data Corp. analyst Joan Carol Brigham said, as they have to jury-rig connections to each manufacturer's version.

However, VESA is set to ratify a features list for its local-bus standard by the end of the month, Ryan said. "The local bus really has potential. It will create killer PCs."

One interesting side effect of the advent of Windows is what is happening with graphics display standards. Graphics standards were critical in the DOS world, Brigham noted, because application software had to have a driver written directly to the hardware in a standard way. IBM usually set the standard, with the likes of Color Graphics Adapter, Video Graphics Array (VGA) and Super VGA making appearances.

However, IBM's current entry, Extended Graphics Array, may end up as more of a controller than a standard. "With Windows, the interface takes over and you have a Windows driver," Brigham said. "It becomes less of a hardware standards issue and more of a Windows compatibility issue."

The hotbed of activity in the Windows arena has graphics board and chip manufacturers hustling to provide innovative products in a market that many analysts say is overcrowded. Thus, a user looking to exploit the full graphical advantages of Windows will find a buyers' market when it comes time to upgrade graphical capabilities.

Windows is having "a real positive impact on the user," Brigham said. "Board vendors face tremendous competition in terms of price/performance. There are a lot of products at very low prices," she said.

Peddie estimated that there are more than 400 boards on the market for VGA alone.

High standards

Of the more than 15 display standards, the following are among the major ones that support Windows 640 x 480 resolution:

Name or category	Pixels	Lines
Video graphics adapter	640	480
Super VGA	800	600
Extended Graphics Array	1,024	768
High resolution or Extended VGA	1,024	768

CW Chart: Stephanie Faucher

Wyse back to basics with upgradable CPUs

BY MICHAEL FITZGERALD
CW STAFF

SAN JOSE, Calif. — A pioneer builder of upgradable personal computers has returned to its roots while carrying out a revamp of its entire product line.

Wyse Technology, Inc. was one of the first vendors to sell upgradable PCs back in 1987, but it abandoned the business in 1990 because only 4% of its users had upgraded.

Recently, Wyse released the Decision 486SI family. The line uses a Wyse-designed local-bus video subsystem, called Hyper16 Video, and is easily upgradable, according to the company. Wyse also uses a switch-upgradable motherboard, so the user can simply flick a switch after installing a new processor, instead of having to upgrade the entire motherboard.

Get organized

Analysts said the new systems and their prices were solid additions to Wyse's product line, but the company must improve its distribution.

"Where they have only 20 to 40 direct VARs today, their goal is to have 200 to 300 direct VARs. I think that's a challenge for them," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. Zwetchkenbaum pointed to the new products and a revamped field sales organization as major pieces of a strategy that, if executed properly, will help Wyse stay afloat in the turbulent waters of the PC industry.

Pricing for the new systems ranges from $1,729 for a 33-MHz Intel Corp. I486DX-based Decision 486SI-33DX to $2,399 for one based on the 33/66-MHz 486DX2.

Wyse also released new models for each of its multiprocessing Unix server families. The 6000I Model 645, a uniprocessor machine, uses a 33-MHz 486, and it is slated to ship later this month at a cost of $8,395. The 7000I Model 740MP supports up to three 33-MHz 486 chips and now has error detection and correction memory, remote diagnostic capabilities, improved connectivity and WY-9977 multidrop communication interface boards.

Microsoft Corp. is using the 7000I 740MP for Windows New Technology development, and it has created a hardware abstraction layer for it. The base price for the 7000I is $19,095.

The high-end Series 9000I 960MP can support up to eight 486DX2 50-MHz chips and 400 users. It is scheduled to ship this month at a cost of $9,895.

At least one Wyse value-added reseller (VAR) was pleased with the announcements.

"I don't know of any other vendor whose product line is as wide as theirs in Unix System V," said David Robinson, president of Digital Systems Management, Inc. in Lakeland, Fla. Robinson also resells Digital Equipment Corp. equipment.

3M to ship 'floptical' disks

BY MICHAEL FITZGERALD
CW STAFF

ST. PAUL, Minn. — Imagine a floppy disk that could hold 14 times as much information as it can now, in the same form factor. 3M Co. is slated to begin shipping its new 20M-byte 3½-in. "floptical" disks later this month.

Users will be able to buy them through traditional retail channels. 3M has not set final pricing, but it said it is targeting them at $31.45 a disk. 3M expects street prices to be $105 for a box of five.

Analysts interviewed last week were split on whether they thought flopticals, magnetic disks that rival optical discs in capacity, would become popular.

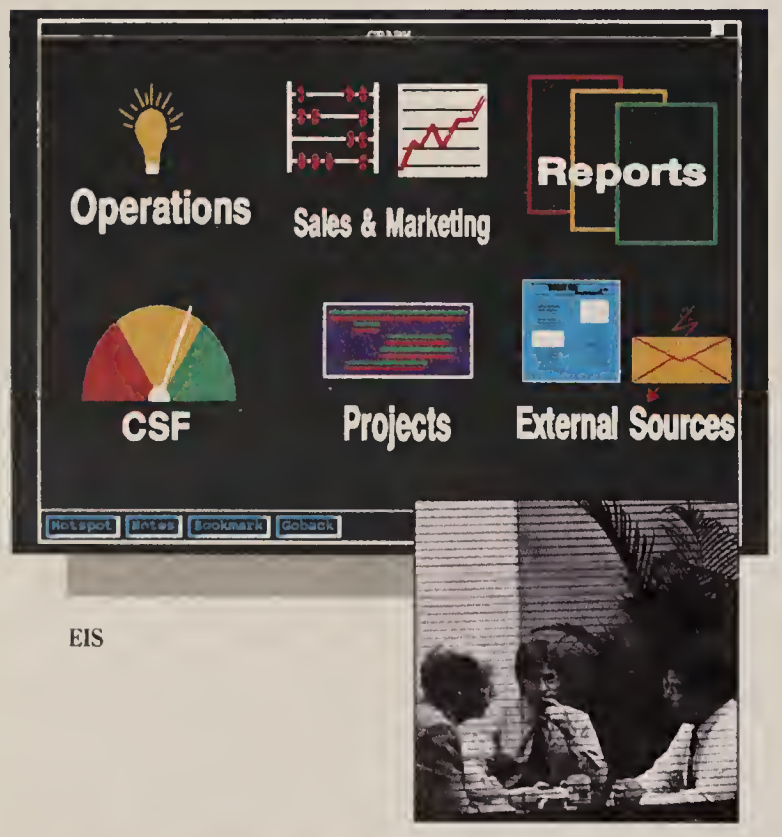
"It's a niche market," predicted Fara Yale, an analyst at Dataquest, Inc. "It's a good idea, but the price of both the drive and the media will prevent it from becoming a product for the masses."

James Porter, president of

Continued on page 58

Because There Are More of Them Than There Are of You...

The SAS® System for Information Delivery



EIS

The CEO needs visual checks on all the factors critical to the success of the business. The CFO wants a "small" change in the financial reports. The marketing VP is anxiously awaiting pricing models. And they're *still* waiting for inventory and quality monitoring systems out on the factory floor. How can one IS manager—with so little time, so few resources, and so many budget constraints— meet the diverse needs of so many clients? The answer is the SAS System for Information Delivery.

Integrated Applications for Enterprise-Wide Productivity

Unlike stand-alone solutions—which drain your software budget and drive up training and support costs—the SAS System gives you a cohesive, enterprise-wide application strategy. One that fits the needs of the executive suite, the manufacturing floor, and everywhere in between. One that supports cooperative processing across hardware platforms. And one that responds immediately to new or shifting applications demands. Virtually any application that involves accessing, managing, analyzing, and presenting data is available within the SAS System's information delivery environment.

Call Today for a Free Video Preview of the World's Leading Information Delivery System.

See for yourself why the SAS System is the only software you'll ever need. Give us a call at 919-677-8200 for your free video preview. Also ask for details about the free SAS System Executive Briefing...coming soon in your area.

SAS Institute Inc.
Software Sales Division
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc. Copyright © 1992 by SAS Institute Inc. Printed in the USA.

Data Visualization

BOARD WATCH

Christopher Lindquist

Visions of Paradox

Summer is winding down, but the bulletin boards continue to buzz.

■ **A Paradoxical situation.** Everyone on Borland's BORDB forum seemed anxious to jump the gun on Paradox announcements — except Borland. Paradox 4.0 is finally being shipped, according to the company. But at least one user on CompuServe claimed to have it a couple weeks ago, much to the surprise of the Borland support staff. After some good-humored hounding, the culprit admitted to his hoax, saying he was only trying to break the tension of the wait for the upgrade.

Other users reported that one hardware vendor was announcing shipment of PCs with Paradox 4.0 bundled well before the database was shipping, and another vendor, Target Software in Allentown, Pa., posted a note about a third-party dialog box painter for 4.0. Now we'll see if the excitement is justified.

■ **No ifs, ands or butts.** A group of technical support folks on Usenet generally agreed that smoking and computers don't mix. "Machines don't like second-hand smoke any more than people do," quoth one. Their anecdotes sounded like medical reports: disk drives, keyboards and screens coated in tar, resulting in less reliable equipment.

■ **Thai-ing one on.** A response for when they say it can't be done: "It's one of those things where people say 'Even with a computer the size of the universe, it can't be solved in less time than it takes to count all the quarks in the universe, unless you buy the hackers more Jolt and Thai food than has existed in all of history.' "

■ **Parting advice.** "If you want to be a hero, never buy Version 1.0 of anything. Pioneers are easily recognized by the arrows in their backs." And, "Low serial numbers are trouble. High serial numbers are trouble too, but more people can tell you their horror stories."

I'm on my way to Computerworld*'s California office, and it's good to know that while everything else will change, my E-mail addresses go on forever. Have any suggestions, tips or comments? Send them to me via CompuServe at 72360,2005, MCI Mail with 549-8464 or over the Internet to chrisl@unixland.natick.ma.us.*

Lindquist is a *Computerworld* staff writer.

HELP LINE

Ami Pro

Part of a continuing series of tips by PC software vendors, based on questions commonly asked of their customer support personnel. This week's tips focus on Lotus Development Corp.'s Ami Pro.

Q How can printing speed be increased?

A Choose Tools/User Setup/Options. Disable the "print in background" option by clicking off the X. Then turn off the Windows Print Manager in the printer section of the Windows Control Panel.

Q How can I move or copy text without using copy/paste?

A Select text, position the mouse pointer where you want to move text and hold CTRL + click the right mouse button. To copy text, hold CTRL + SHIFT + click the right mouse button.

Q How can I select (shade) all text in an Ami Pro document?

A Place the insertion point at the beginning of the file. Press CTRL + SHIFT + END.

Q How can I prevent the (shaded) word I'm looking up from disappearing when I use the Thesaurus icon?

A The word is not visible because there is a need to repaint the screen. Touch PgDn, PgUp; or to avoid this situation, choose Tools/Thesaurus.

Q How can Ami Pro be loaded with an option to create a new file or open an existing file rather than displaying an untitled document?

A Create a new file and just type: Function Opening () File Close () SendKeys ("[altf]") End Function. Then save the file as an Ami Pro Macro, naming it: opening.SMM. Choose Tools/User Setup. Enable the Run Macros program and write in the file name. Press OK.

© 1992 Compaq Computer Corporation.

(Coming August 31, a new idea in network printers from Compaq.)

COMPAQ

WHATEVER STEPS YOU TAKE, ONLY ONE 4GL GUARANTEES TOTAL FLEXIBILITY.

FOCUS FROM INFORMATION BUILDERS: The 4GL That Gives You The Options To Work With Any Database.

IS YOUR DATA FUTURE PROOF?

Right now almost 90% of your applications use TurboIMAGE database. But, as you move towards relational or object databases, how will you integrate this new technology with your existing data?

WHERE TECHNOLOGY IS GOING, WE'RE ALREADY THERE

Relax. Because now there's a new solution that lets you develop with the database of your choice. You can develop new or maintain existing TurboIMAGE databases and join TurboIMAGE with ALLBASE/SQL and KSAM. Or, convert TurboIMAGE, KSAM or even flat files to ALLBASE/SQL.

Whatever your preference is, we have the solution. It's FOCUS from Information Builders. The leading specialists in distributed information systems. FOCUS offers application development and decision support tools for integrating databases from HP, third parties such as Oracle, and in the future HP's OpenODB.

No other 4GL product comes with this breadth of functionality, bundled with an automatic database conversion tool!

ACCESS ALL OF YOUR DATA

FOCUS is the platform independent application development tool that gives you an unmatched ability to create, control and integrate critical information systems within your enterprise.

And because FOCUS provides you with complete application portability and access to over 50 data structures across 35 operating systems, you can port any application to the HP and still have access to your legacy data.

So for guaranteed database flexibility the next step is easy. Call Information Builders, an HP Premiere Solutions Provider, for more information on FOCUS or to attend a FREE Seminar...

Call 800-969-INFO

In Canada call 1-416-364-2760

IBI FOCUS

Information Builders, Inc.

All names and products mentioned are the trademarks or registered trademarks of their respective holders. FOCUS is a registered trademark of Information Builders, Inc. 1250 Broadway, New York, NY 10001

SEE US AT INTEREX, BOOTH #129

Gillin

CONTINUED FROM PAGE 53

is about three months late, judging by the fuzzy release date Borland discussed last year, and it's freezing purchases. The company has managed to squeeze out a new release of Paradox for DOS, but it's stopped even talking about time frames for Paradox for Windows, which it first demo'd a year ago.

Borland's latest reorganization puts dBase IV into the programming languages group, where it'll be sold as a tool for professional programmers. That underestimates the upgrade potential of dBase's user base and makes it a second-class citizen to Paradox. To top it all off, Borland is physically split up among more than a dozen buildings all over Scotts Valley, Calif. Isolation dampens morale.

Recommendation to Philippe Kahn: Hire yourself a professional manager. Your company is too big and diversified to be run like a bootstrap operation. The smart people at Borland need to concentrate on products, not reporting structures. A lot of people want Borland to do well, if only to counteract the Microsoft dreadnaught. But even a band of barbarians needs organization.

WYSIWIS. The two big bugaboos of electronic publishing are that documents are too big to transfer over a network economically and that a pretty document created on one machine won't look good on another unless the user has exactly the same software installed.

Now, along comes Adobe Systems with an approach you could call "What You See is What I Sent." Its Carousel software, due out in early 1993, is the most exciting new technology I've seen this year. Interleaf has a similar product called WorldView (shipping now) that's aimed at the high-end publishing market, but I haven't seen that yet.

Carousel makes high-quality electronically published documents readable by anyone with an inexpensive software "viewer." And it's machine-independent. In a demonstration, Adobe took a desktop-published front page of *Computerworld*, converted it to Carousel format and transferred it freely between different computers — DOS, DOS/Windows, Macintosh and Next. It looked almost exactly the same on all of them.

Carousel uses whatever fonts it can find on the target machine to recreate a page as accurately as possible on the screen or printer. Where it can't find a font, it mimics it using an Adobe technology that keeps all the line spacing and letter widths intact. You hardly notice the difference.

Best of all, Carousel compresses files by about a factor of 50 compared with PostScript. The *Computerworld* page took up a minuscule 28K bytes of disk space, including all the graphics.

What's neat about that is that a 28K-byte file is a snap to download from CompuServe or send out over the corporate E-mail system.

Imagine publishing your magazine, newsletter, product documentation, etc. and posting it on a bulletin board or shipping it on floppy disk. Adobe has even built some hypertext features into Carousel that let you skip around a document by clicking on headlines or icons.

Now, whether Adobe can actually *sell* Carousel in the quantities needed to assure success is another story. As a publisher, I hope it can.

Gillin is *Computerworld's* executive editor.

WHAT IS MOST impressive about Quattro Pro for Windows is its notebook metaphor. Picture your full year's worth of expense reports in a single 3-D volume with individual pages for each week.

Tax preparation meets CD-ROM

NEW YORK — Research Institute of America, Inc. and Computer Language Research, Inc. recently entered into an agreement to bring to market what the companies claimed is the first integrated compact disc/read-only memory (CD-ROM) software package for small to mid-size accounting firms.

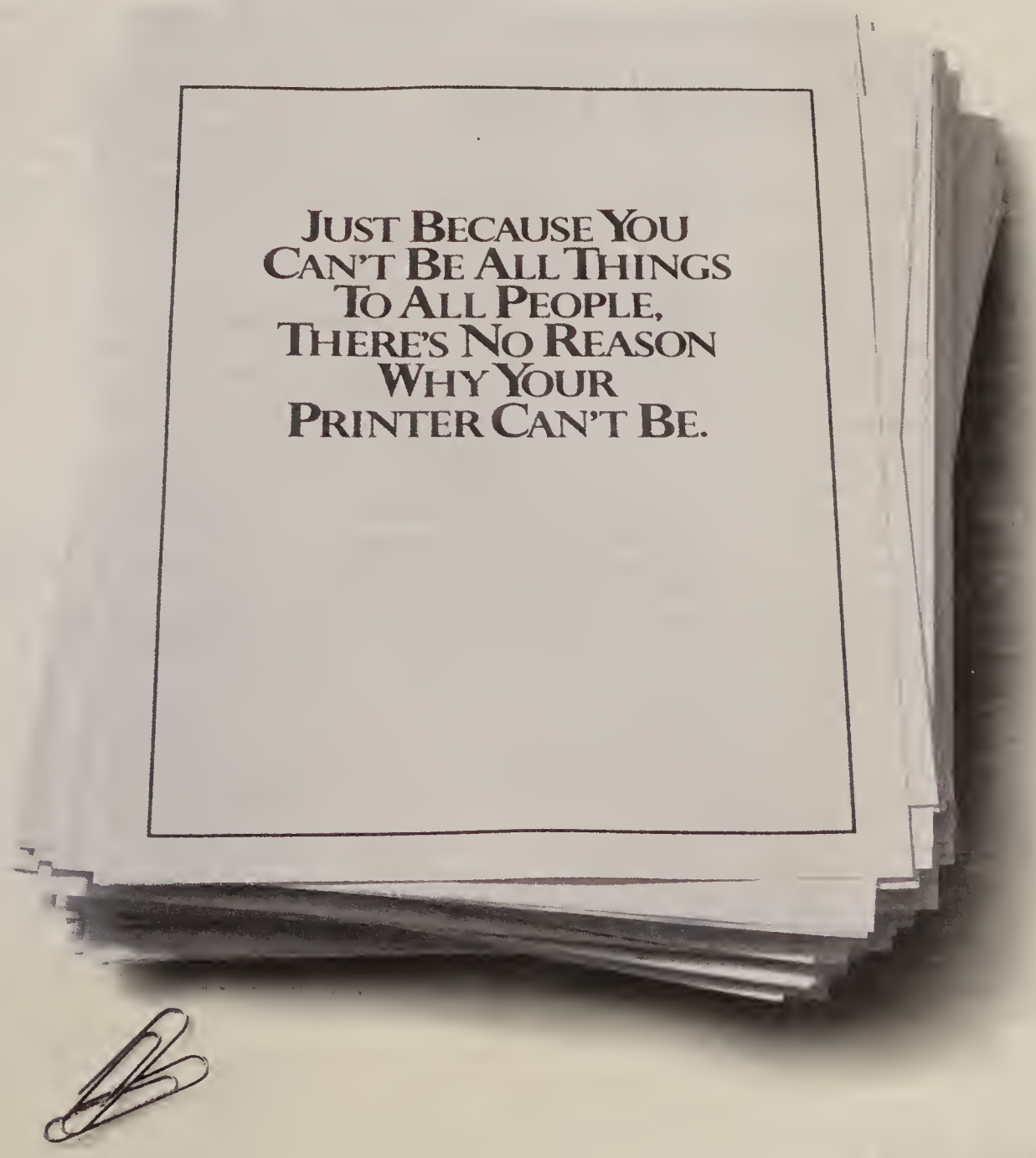
Research Institute's electronic research product, OnPoint, will be integrated with EasyGo, a tax preparation package from Computer Language, to create EasyGo with OnPoint, a CD-ROM system that will run on Intel Corp. 80386- or I486-based machines. EasyGo offers tax compliance, research, electronic tax forms, planning and practice management, all on a 600M-byte disk.

Stephen T. Winn, president and chief executive officer at Computer Language, said EasyGo incorporates all types of tax forms for city, state and federal taxes.

EasyGo with OnPoint is priced starting at $2,000 for four disks. Users will receive monthly updated disks to reflect changes in tax law, according to Louis Luccarelli, president and chief executive officer at Research Institute.

Winn said users who buy the disks before Oct. 15 are entitled to a free Toshiba America Information Systems, Inc. CD-ROM reader.

© 1992 Compaq Computer Corporation.



(Coming August 31, a new idea in network printers from Compaq.)

COMPAQ

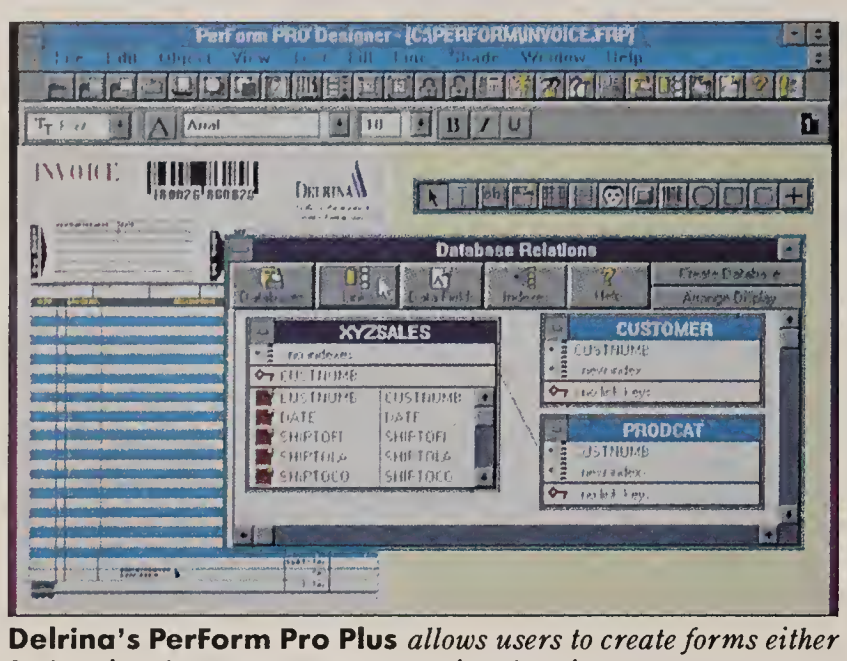
Delrina readies PerForm Pro Plus

BY CHRISTOPHER LINDQUIST
CW STAFF

Toronto-based Delrina Technology, Inc. has taken a slightly different tack on building personal computer-based applications.

Companies such as Microsoft Corp. and Borland International, Inc. created development tools by attaching a form designer to a development environment with Visual Basic and ObjectVision, respectively. Delrina has come at it from the other direction. It has added a development language and other tools to its forms-creation package.

The result is PerForm Pro Plus, a forms-based tool that works on several levels to automate form procedures. At the first level, PerForm Pro Plus allows users to create forms either by drawing them on-screen or scanning them in.



Delrina's PerForm Pro Plus *allows users to create forms either by drawing them on-screen or scanning them in*

The forms can then be printed as needed, which saves paper and form production costs. Secondly, these forms can be given "intelligence" that allows them to be filled in on-screen and perform such functions as calculations and data validation. The filled-in form is then printed.

Beyond this, the forms can be attached to various databases, such as Borland's Paradox or dBase, and used to automatically retrieve and update information. Finally, the forms can be attached to communications media such as electronic mail or integrated into other applications via Delrina's Intelligent Form Language to create dispersed, large-scale applications.

"The product looks quite stunning," said beta-test user Zul Zaver, an information analyst for the city of Calgary, Alberta. "It's a vast improvement over the old version."

In particular, Zaver said he was impressed with the enhanced user interface, which now offers button bars, and its increased support for external databases. "I think we'll be able to build far more sophisticated applications than before," he said.

PerForm Pro Plus will be available this month for a list price of $399. The PerForm Communicator E-mail communications module and a server-based SQL product is scheduled to ship later this year.

3M to ship 'floptical' disks

CONTINUED FROM PAGE 53

Mountain View, Calif.-based Disk/Trend, Inc., disagreed.

"I expect there is a really good chance a market will develop for these," he said. "It works, it's reliable, and for a lot of folks, it's very handy to have on the computer, and it just might take off."

Performance at a premium

One beta-test user said the product is ideal for him so far, despite its expense.

"We use it tremendously," said John Stewart, host of "Radio Computer Magazine," a syndicated radio show.

The show runs for 30 minutes, and one minute of sound can consume 6M bytes of storage space, which far outstrips the capacity of a conventional floppy disk.

Floptical technology is similar to the Bernoulli removable storage disks from Iomega Corp., but flopticals are smaller and cost less.

3M estimated that 10,000 floptical disks are now installed and that the base will rise to support a $750 million business by 1995. The drives are made by Insite Peripherals, Inc., which has licensed its technology to a number of vendors.

3M said larger personal computer programs such as OS/2 and Microsoft Corp.'s Windows 3.1, which consume many floppy disks, could be held on one disk now.

Re-writing your favorite mainframe applications makes about as much sense as re-inventing the wheel.

But that's how it feels if you are moving to Unix while your programs stay on the mainframe.

We'll help you port your existing applications to Unix. So, instead of wasting time re-writing them, you spend it writing new ones.

uni-SPF™ Includes Dialog Management Services!

uni-REXX® Easy ports for existing applications.

uni-XEDIT® Familiar full-screen editor.

the workstation group
the business choice for open systems

800-228-0255 wrk/grp the workstation group®

IN BRIEF

Tandy ships 3800 HD

■ **Tandy Corp.** released the 3800 HD notebook, which uses the **Cyrix Corp.** CX486SLC chip. The notebook, which actually measures 12.2 by 10 in., comes with 2M bytes of random-access memory and a 60M-byte hard drive, weighs 6 pounds, and has a battery life of two hours. Its list price is $1,999; the company will distribute it in Radio Shack stores.

■ **Texas Instruments, Inc.** recently cut prices $300 to $800 across its entire line of TravelMate 3000 and 3000 WinSX products. A TravelMate 3000 with a 60M-byte hard drive now sells for $2,499, down from $2,799; TI's most expensive 386SX-based notebook, with a 120M-byte drive, is $3,199, down from $3,999. TI also dropped prices between $50 and $550 on its MicroLaser printers.

■ **SuperScript, Inc.** announced that **Kurta Corp.** will collaborate with it on a pen-based desktop personal computer. Kurta makes cordless pen input devices; SuperScript makes pen peripherals.

Biles releases new version of AIM-Supervisor

Eases information sharing

BY MELINDA-CAROL BALLOU
CW STAFF

HOUSTON — Biles & Associates has released a version of its AIM-Supervisor process manufacturing software that was designed to allow users to share information across applications and platforms more easily.

The new version supports both Wonderware Corp.'s NetDDE and Digital Equipment Corp.'s At a Glance software on top of DEC's Application Control Architecture (ACA).

Irvine, Calif.-based Wonderware's NetDDE extends Microsoft Corp.'s Dynamic Data Exchange (DDE), which allows Windows applications to exchange data as if they were on the same computer. NetDDE lets users access information across disparate platforms and networking protocols that support DDE, Biles officials said.

Data automation

Using the NetDDE interface, for instance, engineers can set up a system to bring real-time process data from the factory floor into a Microsoft Windows-based spreadsheet automatically. Biles' AIM-Supervisor, which runs on VMS, collects the data and forwards it to the spreadsheet application. The communications to the personal computer are taken care of by NetDDE.

"A process or manufacturing engineer can dynamically update a spreadsheet with real-time and historical information, and once that information is in his database, he can manipulate it and do new calculations," said John Hook, national sales manager at Biles. "People have done this in the past but it hasn't been automatic — they've had to key it all in or do flat-file transfers. Now engineers can get the data automatically without having to know anything about the system and get on with the work that they know best."

With At a Glance, users can bring data from AIM to users on a range of platforms regardless of DDE support. At a Glance, which runs on top of DEC's ACA Services, lets users integrate PCs or workstations running VMS, Unix or MS-DOS.

The two iterations of AIM offer varying advantages: The NetDDE interface offers AIM users easy access with their data to any of more than 1,100 DDE applications. The At a Glance interface requires a client/server implementation using ACA Services.

This means that users must write an ACA programming script for each client, but they can integrate data over operating systems that are not DDE-compliant, Biles officials said.

Support for the interfaces is shipping now in a prerelease version, and each is priced at $5,000. ACA Services and At a Glance must be purchased separately from DEC, but NetDDE is included. The AIM manufacturing system runs on VMS and Open VMS, and pricing starts at $16,000.

NEW PRODUCTS

Software application packages

Comshare, Inc. has released Commander Version 3.0, an executive management support system.

Commander 3.0 has a personal computer-based graphical user interface. The Desktop Builder incorporated into Commander 3.0 is an application builder that includes a new scripting language and graphical script generator, according to the company.

Additional features include remote application management, information and application security and change control.

Commander 3.0 costs $1,500 for a single copy. Volume discounts are available.

Comshare
3001 S. State St.
Ann Arbor, Mich. 48106
(313) 995-0398

Peripherals

The Information Systems Division of Mitsubishi Electronics America, Inc. has introduced Diamond Pro 17, a color monitor for personal computers, Apple Computer, Inc. Macintoshes and Unix-based systems.

The product was also designed for users who want a desktop monitor for Microsoft Corp.'s Windows and Open Look environments. Itacan be used for computer-aided design, manufacturing and engineering and for Unix users who are upgrading from monochrome monitors, according to the company.

Diamond Pro 17 can work with the Diamond Match Color Calibration System, which matches on-screen images with hard copy colors.

Diamond Pro 17 costs $1,599.

Mitsubishi Electronics America
Information Systems Division
5665 Plaza Drive
Cypress, Calif. 90630
(714) 220-2500

Kansai Electric USA has started shipping the serial version of its Kwik-Stor series of user-expandable printer and plotter buffers.

With standard Apple Computer, Inc. Macintosh or IBM single in-line memory modules, the buffers can be expanded to a maximum of 8M bytes, the company reported. The baud rate can be set to allow the product to receive data from the serial port of the CPU.

Kwik-Stor can then transmit data to the printer. Support for both hardware and X-On/X-Off handshaking is provided.

Serial prices range from $229 to $1,029.

Kansai Electric
Suite 220
2005 Hamilton Ave.
San Jose, Calif. 95125
(408) 377-7062

SIIG, Inc. has introduced Video Grabber Plus, a multimedia add-on board for AT computers.

Video Grabber Plus features video capture and live audio and video display. Images can be frozen and saved in an assortment of file formats ranging from 24-bit true color to 8 bits per pixel. The product is a video-card enhancement tool that has 21-bit color display support for 2 million colors simultaneously and color keying of 256 colors.

Video Grabber Plus plugs into a standard 16-bit XT/AT expansion bus parallel to the Video Graphics Array (VGA) card. It connects to the VGA card via its feature connector, the company reported.

Video Grabber Plus costs $495.

SIIG
6078 Stewart Ave.
Fremont, Calif. 94538
(510) 657-8688

PC Guardian has announced NoteGuardian, a hardware product designed to prevent theft of portable computers.

According to the company, NoteGuardian includes a custom design anchor with a built-in lock and a five-foot security cable. For portability, the cable folds into a compact carrying bag. The cable anchor is installed using existing features on the notebook.

PC Guardian costs $49.95.

PC Guardian
118 Alto St.
San Rafael, Calif. 94901
(415) 459-0190

Fax

Brooktrout Technology, Inc. has introduced the TR114, a universal port card that fits into an XT/AT-compatible bus slot.

The TR114 has a dedicated CPU and a digital signal processor on each channel for advanced fax and voice handling and format and compression conversion.

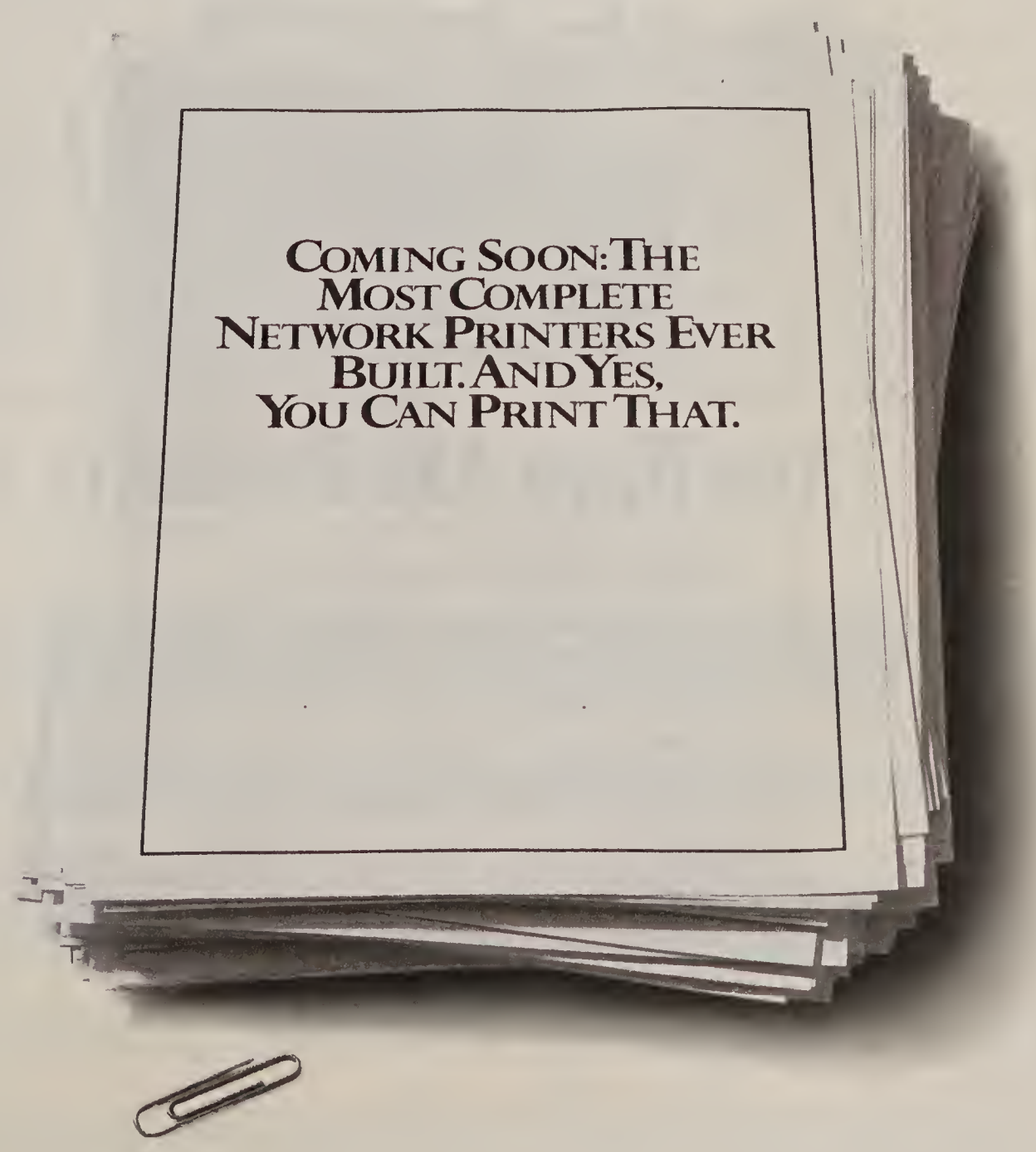
According to the company, the TR114 expands to include eight channels in a single XT/AT-compatible bus slot by using an optional four-channel daughtercard. The four-channel card includes four loop-start telephone interfaces.

TR114 supports Group 3 and 4 fax compression with automatic conversion of ASCII, Tag Image File Format and other files, which allows for binary transfer and eliminates the need for external data modems.

The TR114 costs $2,995.

Brooktrout Technology
144 Gould St.
Needham, Mass. 02192
(617) 449-4100

© 1992 Compaq Computer Corporation.



(Coming August 31, a new idea in network printers from Compaq.)

COMPAQ

Norton Desktop for Windows: Great value

Technology Analysis — A roundup of expert opinions about new products. Summaries written by product research coordinator Derek Slater.

The second incarnation of Symantec Corp.'s Norton Desktop for Windows is greatly improved, reviewers said. The product provides a smoothly integrated file management shell for Microsoft Corp.'s Windows environment, and Version 2.0 is much faster than the previous release.

Ease of use: The Desktop space is usually very crowded, which can intimidate novice users; aside from that minor complaint, reviewers said, the product is very intuitive.

Speed: Speed was the Achilles' heel of the first Norton Desktop, but the new version is considerably faster. The install program allows users to pick and choose their configuration to save disk space if needed.

File management: A customizable button bar gives instant access to common file operations. Reviewers said file management on the Desktop is icon-driven and very intuitive.

Utilities: Norton Desktop includes full-function versions of Norton Anti-Virus and Norton Backup. It also has a solid text-editing module.

Overall value: At $149, Norton Desktop is an excellent value. It simplifies Windows file management and provides a good set of utilities as well.

Symantec's Norton Desktop for Windows 2.0

Reviews	Ease of use	Speed	File management	Utilities	Documentation	Overall value
PC World 9/92	Can be perplexing	No speed demon	Agile	Impressive arsenal	Competent, well-illustrated	Good value, not a must-have
Infoworld 5/11/92	Not intimidating	Load time much quicker	Outshines Windows 3.1	Rich	Presented clearly	Excellent
PC Magazine 6/16/92	NC	Dramatically faster	Improved file viewers	Editor a vast improvement	NC	Even more attractive
PC Week 4/6/92	Easy to configure	NC	Drag and drop	Includes Norton Anti-Virus	NC	More complete and useful
PC Computing 5/92	NC	Improved	Great	Automatic uninstall	NC	Eliminates some problems
Users						
Robert Cameron, A large accounting firm	■■■■	■■■■	■■■■	■■■■	■■■■	Makes Windows much easier
Tom Miller, Tandem Computers, Inc.	■■■▪	■■■▪	■■■■	■■■■	■■■■	Customizable interface
Brian Rodeck, Rodeck Computer Services	■■■▪	■■■▪	■■■■	■■■■	■■■▪	Good added features
Analyst						
Mike Drips, Corporate Computers	■■▪▪	■■▪▪	■■▪▪	■■▪▪	■■■■	More for novices than power users

Key: ■■■■ Very good ■■■▪ Good ■■▪▪ Fair ■▪▪▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Symantec reported profits of $7.7 million on revenue of $62 million for the quarter ended March 31. Profits for the same quarter in 1991 were $5.7 million on revenue of $41.5 million. Analyst Peter Rogers at Robertson, Stephens & Co. rated the firm's short-term performance and long-term stability as very good.

Symantec responds

Bill Whipple, product leader of technical support:

Ease of use: For the most part, it's fairly easy to remove icons from the desktop. You can also have it automatically snap everything onto a grid.

File management: Norton Desktop for DOS has compression technology. Under Windows, we haven't really received that much demand for it, but it's something we may address in the future.

NewWave 4.0: Powerful but slow

Hewlett-Packard's NewWave 4.0

Reviews	Ease of use	Speed	File management	Utilities	Documentation	Overall value
PC World 9/92	Puzzling installation	Sluggish	Different but workable	Crude text editor	A jumble	Complicates things
Infoworld 5/11/92	Customizable	A bit slow	No DOS file management	Finder locates objects	Well-organized	A tad steep for individuals
PC Magazine 5/12/92	Steep conceptualization curve	Less taxing hardware requirements	Files appear as objects	Impressive automation tools	NC	Requires profound change
Computer Shopper 6/92	Anything but intuitive	NC	Icon-oriented	Agent facility provides scheduling	NC	Clearly defined benefits
PC User 7/92	Overly complex	NC	Drag and drop	Editable macro language	NC	Seven out of 10
Users						
Peter Haynes, U.S. Fidelity and Guarantee Corp.	■■▪▪	■■▪▪	■■▪▪	■■■■	■▪▪▪	Effective menuing
Joe Geiser, Insurance Data Processing, Inc.	■■■■	■■▪▪	■■■■	■■■■	■■▪▪	Impressive
John Doktor, Los Angeles Municipal Court	■■■■	■■■■	■■▪▪	■■▪▪	■▪▪▪	Shelter from DOS file management
Analyst						
Karen Offerman, DataPro Information Services Group	■■▪▪	■▪▪▪	■■■■	■■■■	■■▪▪	Good front end for office systems

Key: ■■■■ Very good ■■■▪ Good ■■▪▪ Fair ■▪▪▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

HP reported revenue of approximately $4 billion for the quarter just ended, an increase of 14.6% over the comparable quarter in 1991. Profits were flat at $.76 per share. According to William Milton Jr., an analyst at Brown Brothers Harriman, the company faces continued pressure on margins due to severe price competition.

Hewlett-Packard responds

Kevin Schofield, product marketing manager:

Ease of use: If you are strong technically with DOS, there is a certain amount of unlearning to do. Novice users who don't have those preconceptions may find it easier to pick up. But we know that many users are going to be technically savvy, and we continue to make it easier for them. We've made big strides in Version 4.0.

With Release 4.0, Hewlett-Packard Co. has repositioned NewWave as an object-oriented shell for Microsoft Corp.'s Windows environment. Reviewers found the new version to be very powerful and said learning NewWave's innovative interface requires a lot of time and effort.

Ease of use: NewWave shelters the user almost completely from standard Windows operations. Icons on the desktop represent tools or objects, rather than applications. Reviewers said the learning curve for this unique shell is very steep.

Speed: NewWave is fairly slow and resource-intensive, requiring about 8M bytes of hard disk space.

File management: Reviewers lauded the drag-and-drop file management capabilities.

Utilities: NewWave's utilities include a convenient finder for locating files and the Agent language for scheduling and automation of NewWave functions. The program does not provide utilities such as backup.

Overall value: The benefits of NewWave ($149) are smooth, visual file management, document management for groups and automation of system functions. Experienced users can benefit from the complex Agent macro language, and networked users will gain from the document management features.

Interface, flexibility sell user on Beyond Mail for Windows

BY ROSEMARY HAMILTON
CW STAFF

OVERLAND PARK, Kan. — North American Salt Co. recently picked Beyond, Inc.'s Beyond Mail for Windows as its corporate electronic-mail package, and it will soon begin installing it across its enterprise.

The firm selected Beyond Mail, which is far from a mainstream product today, because its messaging functions were comparable to the top sellers, such as Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s Mail, said Michael Borbely, manager of networking and microcomputing at North American Salt. But, more importantly, it has a superior user interface and allows users to create customized workgroup applications, Borbely said.

Beyond began shipment of its Windows package earlier this month. In addition to basic E-mail features, the software allows users to include applications on the Beyond Mail platform that use its rules and forms technology. Users can also create work-flow and routing applications that include automatic-mail functions.

North American Salt is a privately held company that owns several salt and chemical businesses. It had revenue of about $600 million last year, Borbely said. Approximately 3,000 people work for the various North American Salt businesses.

"We came into this [E-mail selection] project with some very short and simple, but important, needs," Borbely said. "Beyond Mail provides the basics, and then there is a rules-based engine that walks over the rest of them," he said, referring to competitors' offerings.

North American Salt is working on some test applications that Borbely said will allow his group to write applications that boost the work-flow process, which they could not do with other E-mail packages.

Future applications

Borbely's group plans to write a Beyond Mail application that will automate the financial reporting process, which currently calls for plant managers to submit Lotus 1-2-3 spreadsheets each quarter. The Beyond Mail application is intended to automate the spreadsheet routing and consolidation process. It will also include triggers that will alert plant managers to send their spreadsheet data via Beyond Mail to headquarters. A Beyond Mail application will compile the data, and the tool will then automatically route a summary report to managers.

For now, however, the focus is to provide E-mail training to users, many of whom have not used E-mail before, Borbely said. "We will start at the executive level and then let it rain down through the ranks," he added. "We are sizing up our needs now to take it enterprisewide. Our initial implementation will be for no more than 1,000 users," he said.

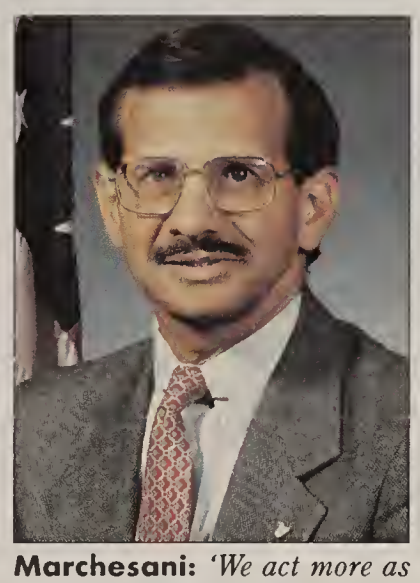
Navy uses ESP to cut costs

New personnel system may become model for other federal agencies

BY GARY H. ANTHES
CW STAFF

ARLINGTON, Va. — The federal government gets plenty of criticism for botched system development projects, but occasionally Uncle Sam hits a home run. A personnel system developed in-house by the U.S. Navy appears to be such a winner.

The Electronic System for Personnel (ESP) substitutes electrons for the 55 tons of paper that were previously used to find, hire, transfer and promote civilian Navy employees. In addition to cutting costs and boosting productivity, ESP has fundamentally improved the relationship between the Navy's Human Resource Office here and the users it serves.



Marchesani: *'We act more as advisers'*

By the end of the year, ESP clones will be installed at four other Navy sites, which will bring the total number of users to 40,000.

The U.S. Department of Defense intends to use ESP as the foundation for a departmentwide system in its corporate information management program. In addition, several civilian agencies are eyeing the system for their own use (see story page 64).

ESP automates basic personnel management paper flows — requests for personnel actions, position descriptions, job applications and approval forms.

Images of these forms move from a variety of Navy offices through dial-up connections to a local-area network at the Human Resource Office.

A classification module enables managers in the field to electronically select or cut and paste position descriptions from a central library of 150 standard Navy job descriptions. The system prompts the user for information and responds with guidelines to help the manager select the proper job series and pay grade.

Users can then transmit the description to the personnel office with an electronic rendering of a personnel action request form. If the requested action is to fill an open position, the office can return to the user a list of qualified applicants selected from the Navy's master personnel database in Oak Ridge, Tenn.

ESP also allows managers to track the status of their requests as they move through the bureaucracy and provides reports containing various statistics related to personnel actions.

The original objectives for the system were the classic ones: to reduce manual effort, eliminate errors, speed processing and trim costs. But ESP has produced an important side benefit, according to Michael F. Marchesani, director of the Human Resource Office.

"Now managers don't call us with questions like, 'Where is my request to hire a secretary?' They can dial in and find that out for themselves," he explained.

Continued on page 64

ON SITE

U.S. Navy
Human Resource Office
Arlington, Va.

- **Challenge:** To automate 35-year-old manual processes that generate 55 tons of paper annually.
- **Approach:** Applications written in-house using FoxPro software from Fox Software move electronic forms over a Novell LAN linking 200 PCs. Smart cards for authentication will eliminate requirements for signatures on paper.
- **Results:** $500,000 investment has had one-year payback in labor savings, allowed office to cut clerical staff by 12 people and staff to evolve "from paper pushers to human resource analysts and consultants."

People have always b together. Unfo computing envir

The good news, however, is there's a solution. Lotus Notes® software. A breakthrough technology that's helping organizations overcome the technological roadblocks found in most mixed computing environments, which often stop good ideas from ever going anywhere.

You see, Lotus Notes is a flexible workgroup computing environment that signals a better way for end users to work together...while giving IT and MIS professionals a better way to more effectively leverage their company's existing hardware, software and network investments.

Let's face it. Many companies have spent fortunes on technology over the years and have begun to wonder just how well it's paid off. With Notes, the benefits are immediate. Companies can finally begin connecting people and ideas for more informed decisions. Regardless of group size, location or network configuration.

What's more, Notes is an extremely flexible environment that makes the development and deployment of all kinds of custom applications a relatively quick and easy process. Some typical applications include lead tracking, product planning, brainstorming, account management, reference libraries, call reporting, quality management and more. There are small and large companies, in fact, that have bought Notes to solve a specific problem, only to discover that it answered other needs as well.

How People Are Using Lotus Notes

Strategic Planning
Sales Management
Industry Newswire
Customer Service Tracking
Forms Routing
Quality Management
Contract Library
Correspondence Tracking
User Group Discussions
Project Management
Sales Presentations
Policy Handbook
Electronic Mail
Financial Profiles
Telemarketing
Technical Support
Job Postings
Credit and Collections

Lotus Notes runs on the most popular networks (Novell®, IBM®, Microsoft®, Banyan® and DEC™). And,

Lotus Notes is an innovative workgroup computing environment designed to increase

©1992 Lotus Development Corporation. All rights reserved. Lotus, Lotus Notes and 1-2-3 are registered trademarks of Lotus Development Corporation. Novell is a registered trademark of Novell, Inc. IBM and OS/2 are registered trademarks of International Business Machines Corporation. Microsoft is a Banyan is a trademark of Banyan Systems, Inc. Macintosh is a registered trademark of Apple Computer, Inc. UNIX is a registered trademark of UNIX System Laboratories, Inc.

een open to working
rtunately, their
onments haven't.

in Windows™ and OS/2®. Just as we've done with our 1-2-3® spreadsheet, we'll soon have Notes running on all major platforms, including Macintosh® and UNIX®. Again the objective is to provide users with a seamless way of working together whether they're in the office or on the road. No matter what platform they use.

There's even more good news. You can get started with Notes for less than $500 per user. In fact, when companies looking into Notes realize how much they can improve their productivity without major expenditures of time and money, their decision becomes a whole lot easier.

So, if you're waiting for the light to turn green, why wait any longer? Just call us at **1-800-872-3387, ext. 6709.** We'll help you get things moving right away.

Lotus Notes

For the Notes Seminar nearest you,
call 1-800-828-0541.

your organization's productivity.

registered trademark and Windows is a trademark of Microsoft Corporation. DEC is a trademark of Digital Equipment Corporation. Inc
In Canada, call 1-800-GO-LOTUS.

IN BRIEF

Faximum, HP unite

■ **Hewlett-Packard Co.** and **Faximum Software, Inc.** will develop client/server fax software for Unix workstations, the two companies recently announced.

HP will provide client/server expertise and human-factors engineering, while Faximum will concentrate on building fax software in a server environment.

The two plan to build a Transmission Control Protocol/Internet Protocol network that runs under the Open Software Foundation's Motif and will support both PostScript and PCL printer languages.

■ **Lotus Development Corp.** recently snagged more CC:Mail business. It announced that **JWP Information Services, Sears Business Centers** and **Corporate Software, Inc.** will standardize on its electronic-mail platform. The three together licensed 3,000 CC:Mail nodes.

■ **CE Software Holdings, Inc.**, which makes QuickMail, an electronic-mail package for the Apple Computer, Inc. Macintosh, said it will bundle On Technology, Inc.'s Meeting Maker group scheduler with QuickMail.

CW singing conversion blues

Switch to Unix-based publishing system gives staff rude awakening

BY MARYFRAN JOHNSON
CW STAFF

Fourth in a series of reports on Computerworld's *own migration to a Unix-based client/server system.*

"All stressed up and no one to choke."

That slogan has been appearing on T-shirts in novelty stores this year, and *Computerworld* could probably use a case of them about now.

Overshadowing the normal stress of news deadline pressures are a host of troubles with our own $850,000 "rightsizing" project, which is taking the publication from a proprietary to a Unix-based publishing system that runs on IBM hardware.

Staff members involved in the conversion effort have been struggling with overdue hardware shipments, inexplicable software bugs, networking snafus, troubles with backup printing facilities and, most recently, escalating pressure from top management.

"I don't think we knew what would be involved with this," said Bill Laberis, editor in chief of *Computerworld*. "No one tells you."

Fuel to the fire

Further complicating matters are some upcoming special projects that cannot be accomplished if Atex, Inc.'s new Workgroup Publishing System software is not up and running smoothly by mid-October.

"We are under an extremely tight, extremely aggressive ramp-up schedule," said Catherine Gagnon, chief copy editor and a primary candidate for one of those T-shirts.

The appearance two weeks ago of a mysterious system-crashing bug was all the more maddening for the information systems department and the eight-member copydesk. The

CW's Gagnon: *'We're under an extremely tight schedule'*

bug freezes the screen and forces a reboot of the system, losing any changes not stored and saved. No one has been able to determine if the problem is the fault of the Atex application or Microsoft Corp.'s Windows 3.1 graphical user interface.

"Atex said this would be a stable product," Laberis said. "But when you talk to users, they don't think it's stable. They're finding it extremely buggy."

The ultimate gain from all this pain, however, should be faster, more flexible production of the newspaper, Laberis noted. *Computerworld* currently runs a proprietary version of the Atex publishing system on aging PDP-11 minicomputers from Digital Equipment Corp.

The client/server system will be anchored by two IBM RISC System/6000 servers that will work in concert to run the Atex publishing software and to provide mirrored backup and redundancy.

Hanging off the RS/6000 servers will be a network of 50 IBM Personal System/2s and personal computer clones on writers' and copy editors' desks.

As one of the first sites to install Atex's new Unix-based system, *Computerworld* has demanded and received a high level of attention from the vendor. Complaints about support last spring led to the assignment of a full-time Atex employee for the project.

Under the initial plan — which looks wistfully optimistic now that everything is months behind schedule — the *Computerworld* copydesk was to be 100% converted to the new publishing system this month.

Last week, the copydesk hit the 10-page production mark, and the goal is to roll out a half-dozen more pages each week through October. By January, all of the writers and editors should have joined the copydesk on the new system.

The first RS/6000 has been installed, and the second is due in early September. Any shipping delay for the RS/6000 could have serious consequences for that mid-October deadline. "Almost everything from IBM has been two to four weeks late," said Linda Nelson, *Computerworld*'s IS director.

Another obstacle is the office politics version of "Too many cooks spoil the broth."

"We are completely re-engineering how we produce our pages, and that introduces the possibility that politics can get involved," Nelson said. She recently began distributing a detailed report on the project each Friday afternoon to a host of managers from both the production and editorial sides of the company and to key vendors.

What about backup?

Another pragmatic concern is backup — in this case, a software problem at the backup facility for Perry Printing Corp. in Waterloo, Wis., the printer where *Computerworld* ships its pages for final printing and distribution.

A few weeks ago, the image-setting machine at Perry went on the fritz, and a handful of pages being produced under the new system had to be duplicated on the old system.

The problem was resolved by arranging for additional backup image-setting facilities at two other printing companies in Madison, Wis.

Computerworld is also coping with staff shortages. The systems department recently lost its No. 2 person, and the copydesk has been searching for another editor familiar with Atex software. Out of 300 resumes received, only one listed Atex experience.

Saber Menu System debuts

Saber Software, Inc., a Dallas-based maker of local-area network menu and administration utilities, is shipping Version 2.0 of its Saber Menu System for Microsoft Corp. Windows.

The new icon-based version runs under Windows 3.0 and 3.1 and was designed to simplify LAN/Windows management and administration. It boasts an Iniman utility, which gives LAN administrators networkwide control and automatic management of users' .INI files.

For the user, Saber Menu System 2.0 provides a point-and-click iconic front end with customizable screen views, personalized menus, security, screen blanking and network messaging. Saber Menu System is available in 1-, 10-, 25-, 100- and 250-user versions.

Navy uses ESP

CONTINUED FROM PAGE 61

"Now we act more as advisers, as counselors. We're playing the role of human resource specialists, not paper pushers."

After two false starts plagued by poor contractor performance, the Human Resource Office decided to do the job itself. The result was a $500,000 system coded in FoxPro from Fox Software, Inc. in Perrysburg, Ohio. It runs on a Novell, Inc. LAN that links 200 IBM-compatible personal computers to a server and supports 1.2G bytes of data storage.

The Navy is testing "smart cards" — wallet-size cards with embedded microprocessors — for electronically signing documents and authenticating the signatures of thousands of Navy managers outside the personnel office.

Strong impression

The U.S. Navy's Human Resource Office at Crystal City in Arlington, Va., has demonstrated ESP to 42 defense and civilian agencies of the federal government, and a number of them seem inclined to implement the system. Having been generated by a government agency, the software is free.

The U.S. Department of Agriculture, which administers personnel systems for 460,000 employees at several agencies, said it is likely to add ESP to its automated operations as a sort of front end or user interface.

"What's attractive is that ESP begins with the manager, not the personnel office," said Brad Foote, acting director of the automated personnel division. He said most government personnel systems require managers to fill out paper forms and send them to a human resource office for data entry.

"The council has reviewed the ESP and we're impressed with it," said Philip Schneider, a member of the interagency Personnel Automation Council and assistant director of work force information at the Office of Personnel Management. "We're encouraging agencies to look at ESP as one of several options that are quite good and fairly easy to adopt."

"Its orientation is toward line management," Schneider added. "It helps cement an operating relationship between management and the personnel office."

LAN-to-host product ships

Digital Communications Associates, Inc. (DCA) in Alpharetta, Ga., said it is adding support for TN 3270 over Novell, Inc.'s NetWare for IBM's Systems Application Architecture (SAA) and Transmission Control Protocol/Internet Protocol (TCP/IP) to its micro-to-mainframe connectivity products.

TN 3270 is industry-standard terminal emulation software that allows users to access IBM hosts without going through an IBM server. The new support will allow users of DCA's Irma Workstation for DOS, Irma Workstation for Windows and Irma Workstation for Macintosh to access mainframes through non-DCA gateway products, such as NetWare for SAA or a TCP/IP internetwork link.

According to DCA, NetWare for SAA support will be included in its Irma Workstations for Windows, DOS and Macintosh near year's end. TN 3270 support will be included in the DOS and Windows Workstation products by the end of next year.

MICHELLE DOSTERT

PCs and voice recognition help co-op sell artwork

BY CAROL HILDEBRAND
CW STAFF

Mixing computers and art has always raised some eyebrows, with many artists turning a thumbs-down on computer-generated works of art.

But nobody can argue with the idea of creating a network to help art dealers better *sell* art created by humans.

Joe Sigel, the founder and chief executive officer of the Art Research and Trading Cooperative (Art Co-op) in Santa Fe, N.M., has harnessed together four personal computers, voice recognition software and fax and modem boards to create an on-line clearinghouse that lets dealers buy and sell limited-edition serigraphs and the like without spending a day on the phone.

"What's most unique is that we have been able to merge database technology with voice response and fax technology," Sigel said.

Hybrid system

The system runs on networked 386- and 486-based PCs. Two 24-port PCs run the voice response system, which encompasses Ease call-processing software from Expert Systems in Atlanta and voice boards from Dialogic Corp. in Parsippany, N.J. The third machine houses the fax engine, which is also from Dialogic, while the fourth PC contains the database itself, which is FoxPro, Inc.'s product. Sigel said the setup is a mixture of DOS and Unix because the fax boards are Unix-based.

Sigel, who deals in the secondary art market, said he first came up with the idea for the system as a reaction to the time-consuming phone calls he had to make looking for a specific work of art. As the phone calls rippled outward, the price of a work of art also tended to go up, as one dealer after another tacked on a commission once the work was found.

With Art Co-op, a dealer dials into the system and punches in a personal identification number and a member number. Each work of art in the database — currently about 16,000 titles — has its own identifying number. Using the phone and voice response technology, the caller can search for a specific work of art by title and author. A caller can check the latest trading price of a piece as well as receive a list of all the available titles by that artist. If a dealer decides he wants to buy a piece, it is as simple as pressing "1" on the telephone, Sigel said.

"Once somebody buys, the dealer sends the artwork to us within 48 hours. We inspect it and send it on out," he said.

Art Co-op acts as a clearinghouse for the deal. It faxes the invoice and purchase order to the respective parties and certifies the work and the funds.

The co-op deals in limited-edition prints, serigraphs, photographs and cast sculptures and collects a 10% commission for its pains.

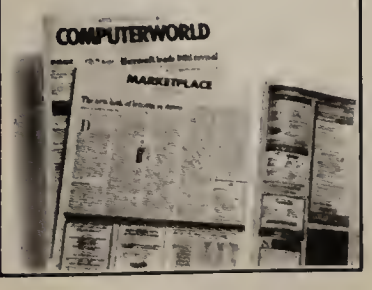
However, Sigel pointed out that with purchasing and selling concentrated in one clearinghouse, the possibility for multiple commissions is nil. The dealer also saves time by working with one entity rather than creating a daisy chain of dealer inquiries.

Running since late last month, the co-op currently has about 1,000 U.S. art gallery dealers and 400 Japanese partners. Membership is free — the company makes its money on commission. Sigel said the network is not totally up to speed. "We're still inputting inventory," he said, adding that it should be complete in about three to four months.

Sigel said he originally planned the network to be computer accessible, "but I found that many gallery owners don't use computers. This allows the user an easier way of accessing the database," he said. He added that he is looking to add in PC access capability as the network matures.

Art Co-op's *PC-based network helps dealers sell artwork such as 'Jelly Bean Seeds,' pictured here*

Check out the Marketplace Pages on Page 104.



PRESENTING THE AUTOMATIC CORPORATE SAFETY NET FOR ALL YOUR PC DATA.

Announcing unparalleled protection for your PC data.

It's called DMS/IB (Intelligent Backup). And it safeguards your corporate data better than any other PC backup product you can buy.

DMS/IB guards against corruption with its powerful data verification function. Multiple redundant indexes and a separate history file guarantee the speed and integrity of your restores.

Its support for totally automatic, unattended backups ensures data gets backed up regularly. DMS/IB will even remind users when it's time to backup their PC data.

All of which means DMS/IB is the best corporate data protection you can buy. And its advanced backup options and multiple compression levels reduce backups to minutes per day.

In short, DMS/IB is the safety net you need to protect your corporate PC data. And it's one you can get simply by calling Sterling Software at (916) 635-5535.

STERLING SOFTWARE
THE FUTURE IS STERLING.

Sterling Software, Systems Software Marketing Division, 11050 White Rock Road, #100, Rancho Cordova, CA 95670 (916) 635-5535
Sterling Software is a registered trademark of Sterling Software, Inc. All other product names are trademarks of their respective companies.

PS/2

*NSTL test conducted against 386 SX and 386 DX systems. **Sale or delivery of the IBM PS/2 486SLC2 Processor Upgrade is subject to FCC approval. Planned availability of the IBM PS/2 486SLC2 Processor Upgrade is 4th quarter 1992. Offer available from June 11 through October 1, 1992. HelpWare available only in U.S.A. IBM, PS/2 and OS/2 are registered trademarks and HelpWare and HelpCenter are trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. ©1992 IBM Corp.

This PS/2 SLC is so fast, it comes with its own speeding ticket.

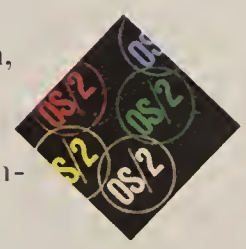
With our advaneed SLC proeessor, the PS/2® Models 56 and 57 are elearly on a fast track. They're already the fastest systems in their class.* And with this spccial IBM PS/2 486SLC2 Proeessor Upgrade, we plan to keep them that way.

Buy a PS/2 Model 56 or 57 SLC before Oetober 1, 1992, and you'll get information on how to upgrade to our powerful 486SLC2 proeessor at a speeial low price of $259.**

486SLC2 Power for $259**

OS/2® 2.0 comes pre-installed on both models, so you can run DOS, Windows™ and OS/2 applications. And every PS/2 comes with **HelpWare**,™ a full range of services and support ineluding a toll-free number.

Thc PS/2 Models 56 and 57 offer so much, other eomputers might as well hit thc road. For more information about our speeially prieed 486SLC2 upgrade or for the IBM authorized dealer ncar you, eall our HelpCenter™ at 1 800 PS2-2227.



- *PS/2 486SLC2 Processor Upgrade for just $259.*
- *Faster than any system in its class.*
- *Comes pre-installed with IBM OS/2 2.0.*
- ***HelpWare**: services and support nobody else can touch.*
- *To learn more about our 486SLC2 upgrade, call 1 800 PS2-2227.*

IBM

NEW PRODUCTS

Electronic mail

Retix has announced OpenServer 400 for Unix Version 1.4, a product that provides coexistence between Open Systems Interconnect (OSI)- and Transmission Control Protocol/Internet Protocol (TCP/IP)-based networks.

According to the company, Version 1.4 provides users with the ability to achieve enterprisewide messaging, without altering their software and systems environment. The product was designed to make use of the multitasking Unix operating system and offers simultaneous use of OSI and TCP/IP stacks on the same local-area network adapter.

Prices start at $5,950.

Retix
2401 Colorado Ave.
Santa Monica, Calif. 90404
(310) 828-3400

LAN software

PrimeService has announced Connection NetWare for Sun Microsystems, Inc.'s Scalable Processor Architecture (SPARC).

According to the company, it enables Novell, Inc. NetWare users to access SPARC files and share data, print services and applications with SPARC-based workstations. Seamless integration lets user hardware and software applications and configurations remain unchanged when accessing the product. Connection NetWare for SPARC has security that is equal to or better than the native operating system, and it includes administration tools and utilities that are the same as the Novell NetWare personal computer line.

Connection NetWare for SPARC costs $5,795.

PrimeService
500 Old Connecticut Path
Framingham, Mass. 01701
(508) 620-2800

Spreadsheet Solutions Corp. has announced DigiTerm, a shrink-wrapped solution that distributes Telerate Digital Page Feed data across a local-area network.

Users of real-time Telerate data can receive information over LANs from personal computers running IBM's OS/2 operating system, the company reported.

Users can view multiple pages of Telerate Digital Page Feed on one screen, and Dynamic Data Exchange can be supported as an option.

Prices are based on the number of users on the network. The Telerate Digital Page Feed controller costs $650 per month, and the Presentation Manager terminals cost $50 to $75 per user per month.

Spreadsheet Solutions
600 Old Country Road
Garden City, N.Y. 11530
(516) 222-1429

Modems

Ven-Tel, Inc. has introduced the 24/2 with Fax, a Micro Channel Architecture V.22 bis modem.

The product, designed for IBM Personal System/2 models, has a send-and-receive fax capability. Support for CCITT V.42 and Microcom Networking Protocol 5 data compression is included, and a Group 3, Class 1 and 2 fax standard provides send and fax capabilities at 9.6K bit/sec., the company reported. The modem is bundled with Quick Link II Fax, a communications and fax software package.

Ven-Tel's internal 24/2 with Fax costs $370.

Ven-Tel
2121 Zanker Road
San Jose, Calif. 95131
(408) 436-7400

Best Data Products, Inc. has introduced the Traveler, a 9.6/4.8K bit/sec. send-and-receive fax and 2,400 bit/sec. data modem.

The Traveler is battery/AC operated and combines V.42 bis and Microcom Networking Protocol in one portable package. The Traveler has a background mode that allows users to continue working in their current program when receiving a fax. Users can view, rotate, print or delete faxes.

The Traveler costs $199.

Best Data Products
9304 Deering Ave.
Chatsworth, Calif. 91311
(818) 773-9600

LAN hardware

Xerox Corp. has announced the 7033 LAN Fax Server.

The 7033 LAN Fax Server allows for integration of the Xerox 7033 fax terminal into the network environment of Novell, Inc. local-area networks. Personal computer users can fax documents from a pop-up window on their screens.

It is not necessary to leave a computer application running under Microsoft Corp. Windows 3.0 or 3.1 or MS-DOS to fax a document. More than 350 fonts are supported using Hewlett-Packard Co.'s Printer Control Language printing format. Within their mailboxes, network users can access a list of faxes and either view, save, print, route, refax or delete each one.

The product costs $7,895.

Xerox
Xerox Square 05B
Rochester, N.Y. 14644
(716) 423-5090

XEROX

They calculated that a 100% increase in business needed a 900% increase in productivity.

Lynn L. Wells
Document Management Representative

When a major health insurer suddenly doubled its customer base, their MIS department quickly predicted disaster. The company's in-house document publishing system was already overloaded. They had to drastically cut the time it took to produce vital documents or risk the company's reputation for customer service. That's when they called Lynn Wells and the Xerox team.

Working together, they saw that merely upgrading equipment to add capacity was not the solution. So they took a fresh approach and completely redesigned the company's document publishing processes. Carefully building on existing systems, they integrated Xerox workstations, software, scanners and laser printers to create a custom publishing network.

Benefit booklets that once took forty-five days to publish now take less than five, a 900% increase in productivity. MICR-encoded checks and claims explanations are being printed and mailed together, saving $350,000 a year in postage. And forms are now created electronically, on demand, reducing costs by 30%.

If saving time, money and customers is your idea of a productive partnership, let us help you put it together. Call 1-800-TEAM-XRX, ext. 147G.

Xerox
The Document Company

USA XEROX

© 1992 XEROX CORPORATION. XEROX® The Document Company and Document Machines are trademarks of XEROX CORPORATION. 36USC 380

SNMP to manage 3Com cards

BY ELISABETH HORWITT
CW STAFF

SANTA CLARA, Calif. — 3Com Corp. recently became the first major coaxial Ethernet local-area network adapter vendor to support Simple Network Management Protocol (SNMP). 3Com announced LinkWatch, a software package that enables an SNMP-based network management system to collect key information from its coaxial and 10Base-T Ethernet adapters. That information can include network activity, configuration data and error levels, 3Com said.

In addition, an SNMP management system can send commands down to a 3Com adapter to perform tasks such as shutting down an ailing personal computer, the vendor said.

The state of Wisconsin Department of Education has been beta-testing LinkWatch on a Novell, Inc. network of 250 PC nodes. The software has helped the department figure out "which users are experiencing excessive collisions and also who the volume users are," said Larrie Christianson, the department's LAN administrator.

LinkWatch also collects PC configuration information, in-

Continued on page 70

Proprietary LAN managers still prevail

BY ELISABETH HORWITT
CW STAFF

FRAMINGHAM, Mass. — Local-area network management is still extremely fragmented and is based primarily on proprietary systems: Users are focusing on tools designed to manage a particular type of LAN, rather than on centralized, integrated LAN management systems, according to recent research.

This state of affairs is expected to change soon as users begin to coordinate management of disparate LANs across the organization, according to a report by International Data Corp. (IDC), a Framingham, Mass., market research firm. More than half of the 200 network administrators IDC interviewed said they plan to centralize LAN network management responsibilities.

A major force drawing users to more centralized LAN management is the movement of the LAN industry toward Simple Network Management Protocol (SNMP)-based management. Earlier this month, 3Com Corp. became the first major Ethernet adapter company to announce software that enables its adapters to be managed by an SNMP system (see story at left).

Sniffing out support

Another important development in this area is Network General Corp.'s slow but steady progress toward full SNMP support on its Sniffer line of LAN analysis tools [CW, Aug. 17].

In addition, user demand for SNMP-based LAN management tools is growing.

For example, Household International, Inc.'s Financial Network Division recently selected ProTools, Inc.'s Foundation Manager over Sniffer, according to Nancy Craig, a senior business systems analyst at the firm. One of the reasons was that Foundation Manager supported SNMP, while Sniffer's support of the network management standard was weak at best.

The Household division has made SNMP compliance a requirement for its LAN management purchases because it intends to implement a centralized SNMP-based management system "down the road," Craig said.

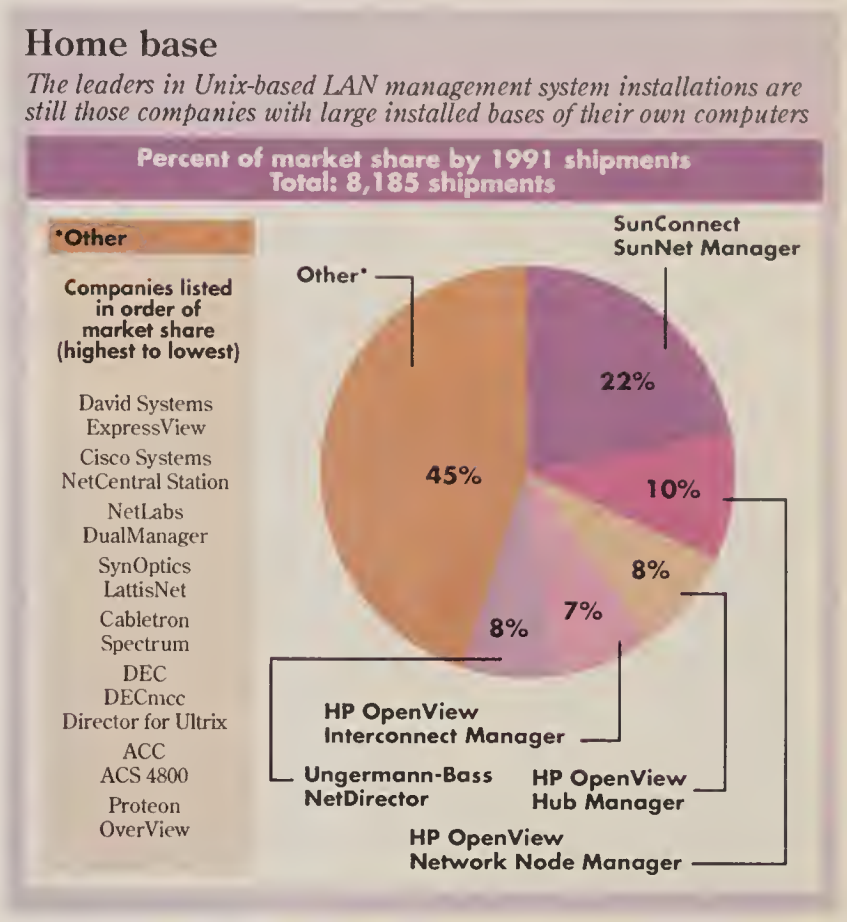
Last year, IDC found that Hewlett-Packard Co. and Sun Microsystems, Inc. were neck and neck in the Unix-based SNMP-based network management systems market in terms of total shipments (see chart).

Close behind them, however, were a number of SNMP-based systems that LAN hub and router vendors sell primarily to manage their own products, according to Ginny Mellinger, an IDC senior analyst who wrote the report. These include David Systems, Inc.'s ExpressView, with 6.4% of the market last year, and Cisco Systems, Inc.'s NetCentral Station, with 6.1%.

Ungermann-Bass, Inc.'s NetDirector (8.6% of 1991 market share) and SynOptics Communications, Inc.'s LattisNet (4.3%) are "in a gray area," Mellinger said. The vendors market these products partly as management systems for their own hubs and partly as multivendor network management systems.

Cabletron Systems, Inc.'s Spectrum made a poor showing last year (2.4% market share), partly because it began shipping about halfway through the year and partly because "it costs too much. Not a lot of applications run on it, and it takes a lot of customization," Mellinger said.

Cabletron addressed Spectrum's pricing problem this year with a lower cost, modular version. The vendor has also announced a series of agreements with third-party network management vendors to integrate their applications into Spectrum. The latest of these, announced last week, is Network General.



Source: International Data Corp.

CW Chart: Stephanie Faucher

IRS turns to X.400 as LAN mail package

BY JOANIE M. WEXLER
CW STAFF

ATLANTA — Every now and then it pays to dump products that only fuel continued investment in proprietary networks and augment management headaches.

Such was the case for the Internal Revenue Service when its Southeast region embarked on a plan to connect four disparate electronic-mail systems with one another and the outside world.

Rather than furthering the proliferation of varied local-area mail networks, the organization settled on a strategy to implement standards-based X.400 mail applications across both local- and wide-area networks.

This move allowed the agency to avoid investing in gateways between different local messaging networks, said Stephen Foley, a communications specialist and X.400 project manager.

Gateways translate messaging formats between different vendors' mail products, such as between a LAN system and an X.400-based wide-area backbone. The more systems you have, the more gateways and associated support expertise you need.

Starting over

Instead, the IRS region parted with its under-$50,000 investment in proprietary messaging software and started fresh with a native X.400 Open Systems Interconnect (OSI) application on its LANs from OSIware, Inc. in Burnaby, British Columbia. One OSIware competitor is Los Angeles-based start-up Isocor, which did not exist at the time of the IRS' evaluation. Onetime player Retix, also in Los Angeles, has discontinued marketing its X.400 client software.

While implementing X.400 at the LAN level is rare today, the IRS determined that "we are saving a great deal of money, we have open systems connectivity, and we are conserving staff by not having to build and maintain gateways," said John Davis, chief of the Telecommunications Systems Branch.

He estimated, for example, that the division will avoid having to add six to 12 support staffers across 12 districts by not installing mail gateways.

In the commercial sector, X.400 on the LAN is not yet common because the standard has a "more complex format" that requires more processing power, asserted Brad Friedlander, a senior consultant at Arthur D. Little, Inc. in Cambridge, Mass. Some industry observers also cite a perceived lack of functions in X.400 applications com-

Continued on page 70

API madness

The IRS views its enterprisewide messaging system as a "regional correspondence management system" that transports mail messages as well as mail-enabled documents, spreadsheets, database files and executable programs.

Therefore, the fact that the industry is divided on the issue of mail application programming interfaces (API) has communications specialist Stephen Foley worried.

"We're into mail-enabled applications, and my one fear is that we won't get a standard API," he said.

Standard mail APIs — or common hooks sitting on top of mail engines — would allow programmers to develop one set of applications that users could run over any mail engine.

There has been some recent movement toward convergence of some basic functionality between different vendor-backed API specs. The convergence is being spearheaded by the X.400 Application Programming Interface Association.

Basically, however, "groupware is a nightmare. It's tied to E-mail, which is tied to a vendor, which is tied to a proprietary API. Running groupware over four or five different mail systems is driving everyone nuts," Foley said. "I'd like [the different API camps] to agree on one spec. Then I'd like to go to OSIware and have them sell me that API."

JOANIE M. WEXLER

On-line services reach $9.6B

Financial sectors lead in five-year sales totals

BY ELLIS BOOKER
CW STAFF

Real-time systems in the financial sectors helped on-line services grow by 61.1%, to $9.6 billion in revenue between 1987 and 1991, according to a recent report by Simba Information, Inc. in Wilton, Conn.

"Online Services: 1992 Review, Trends and Forecast" found that half the industry's sales came from real-time systems for the financial community; on-line brokerage information services alone accounted for 48% of industry sales.

Consumer-oriented services such as CompuServe and Prodigy, while the fastest growing component of the industry, accounted for only 4% of revenues in 1991.

Cash market

The primary uses of on-line services are in the financial sectors, although there is rapid growth at the consumer level as well

	1990	1991	Percent of '91 market	Change
Brokerage	$4.40B	$4.65B	48%	5.7%
Credit	$1.64B	$1.67B	17%	1.9%
Financial news/Research	$1.44B	$1.58B	16%	9.6%
Legal/Regulatory	$671M	$711M	7%	5.9%
Professional	$581M	$615M	6%	5.8%
End user/Consumer	$239M	$344M	5%	43.9%
Marketing	$22M	$31M	<1%	37.8%
Total	$9.0B	$9.6B		6.7%

Source: Simba Information

CW Chart: Stephanie Faucher

Clobbered by recession

"The biggest surprise was how bad a year 1991 was," said Simba analyst Chris Ewell, who noted that the recession dampened the use of on-line services for things such as credit checks and stock market updates.

More broadly, however, Ewell said business applications for on-line information networks are mature and may be saturated. "We're seeing growth rates just a bit higher than the rate of inflation" in this market, he said.

The hope for the on-line industry, Ewell continued, is the great and largely untapped consumer market. Simba predicts that on-line consumer services will grow 145%, and sales industrywide will grow 48% to $14.2 billion during the next five years.

But to crack the consumer market, on-line providers will have to improve the presentation of their user interfaces, making them more intuitive and graphical.

A limiting factor, Ewell said, is the network infrastructure, which at present lacks the bandwidth needed to offer images and graphics comparable in quality to that most pervasive of all consumer information media: television.

As on-line industry revenue increases, so does the number of on-line subscribers. The Simba report found that leading on-line services finished 1991 with nearly 5.4 million subscribers, an increase of 18% compared with year-end 1990.

Meanwhile, the number of database providers and databases rose to 2,120 and 4,869, respectively, according to the Simba report.

3Com software tools support SNMP

CONTINUED FROM PAGE 69

cluding PC vendor, microprocessor type and cycle rate, operating system type and version, adapter type and configuration, user name, PC name, location and phone number. This information is typically not collected by a manageable hub, 3Com said.

Christianson praised LinkWatch's ability to automatically create a topographical map of the LAN and load configuration information based on each PC's net.config file. Hewlett-Packard Co.'s OpenView, in contrast, requires the network manager to load the information manually, "which is cumbersome and time-consuming," he added.

While SNMP has become a widely used de facto standard for the LAN bridge, router and hub industries, it has made scant inroads at the PC LAN adapter level, according to Brad Baldwin, an industry analyst at Gartner Group, Inc., a Stamford, Conn.-based research firm.

Indeed, while 3Com's SNMP product also supports 10Base-T hub-based LANs, it targets users who run their LANs over coaxial cable and thus cannot take advantage of the network management features — SNMP or otherwise — that most intelligent hubs offer, Baldwin said. Coaxial LANs still make up the majority of LAN installations, with coaxial and hub-based LAN shipments likely to be about 50-50 by year's end, he added.

The first of three

Although Cabletron Systems, Inc. now supports SNMP on its adapters as well as its hubs, 3Com is the first of the three leading Ethernet adapter companies to support SNMP, Baldwin said. The other two leaders are Standard Microsystems Corp. and Eagle Technology Corp.

LinkWatch is likely to appeal to users because the software license, which is valid for one installation and can manage up to 251 nodes, costs only $395.

Another appealing aspect of LinkWatch is the fact that most of the software resides on the adapter driver, so it takes up only about 2K to 6K bytes of memory on a DOS PC, according to 3Com. In contrast, other LAN workstation monitoring packages take 20K to 80K bytes on a DOS PC, 3Com said. Part of the software also resides on a Novell, Inc. NetWare server as a Netware Loadable Module.

LinkWatch, available now, was designed to work with 3Com's EtherLink family of adapters and NetWare 386 servers v3.11 or higher. The software package is said to interact with any network management system that conforms to the SNMP Management Information Base II standard. These include Sun Microsystems, Inc.'s SunNet Manager, 3Com's Isoview and HP's OpenView Network Node Manager.

Remote users get TCP/IP sans LAN

BY JOANIE M. WEXLER
CW STAFF

MEQUON, Wis. — The industry forged ahead with delivering networking capabilities to remote users recently when Frontier Technologies Corp. rolled out software said to bring full Transmission Control Protocol/Internet Protocol (TCP/IP) networking to far-flung desktops over telephone lines.

The company's product, dubbed Super-PPP, is software that is layered over the Microsoft Corp. Windows operating environment and Frontier's TCP/IP or industry-standard Open Systems Interconnect communications protocols.

This bestows on users TCP/IP functionality such as terminal emulation, file transfer, printing and Simple Network Management Protocol management over serial lines via the industry-standard Point-to-Point Protocol (PPP) without the user's having to be on a local-area network, the vendor explained.

PPP adds error correction, retransmission and speed to the older Serial Line Interface Protocol (SLIP) for remote TCP/IP networking, observers noted.

Best of both worlds

The product is intended to blend the SLIP economies of networking over phone lines "with the reliability of the X.25 protocol," which requires leased lines, said Ray Langford, engineering manager at Frontier.

Speedwise, PPP could translate into a tenfold improvement over SLIP, depending on the nature of the data, said Mike Kantrowitz, vice president of marketing at Human Designed Systems, Inc., an X Window System terminal vendor in King of Prussia, Pa.

Human Designed Systems bundled its own version of PPP into its X terminals after rigorous performance testing of PPP and SLIP, he said.

San Diego-based AGE Logic, a maker of personal computer X server software, is considering licensing Super-PPP to bundle into its software, which allows users to access multiple hosts si-

> THE PRODUCT is intended to blend the Serial Line Interface Protocol economies of networking over phone lines 'with the reliability of the X.25 protocol.'
>
> RAY LANGFORD
> FRONTIER TECHNOLOGIES

multaneously on a PC screen, said Peter Shaw, company president. AGE Logic's X server software is Windows-based.

Kantrowitz said a limitation of the Microsoft Windows version is that users cannot run applications locally because of the non-client/server nature of Windows. This means users must tax host resources to run applications remotely instead. The limitation, however, has to do with the Windows operating environment, not the network.

The $95 Super-PPP can also function as a low-end IP router if the PC has an Ethernet adapter card, Frontier said. The software is slated for availability next month.

IRS chooses X.400 as mail package

CONTINUED FROM PAGE 69

pared with feature-rich proprietary systems from the likes of Beyond, Inc., CC:Mail, Inc. and Microsoft Corp.

However, "we feel we're getting about 98% of those systems' features," Foley said. In addition, he noted, many proprietary LAN mail functions disappear once a message has been translated in a gateway and is shipped to another network.

The IRS maintains that within a year, its network will be less costly than a patchwork of proprietary systems. This is in part because the IRS' Southeast region is able to route message packets out over FTS-2000 network service provider Sprint Corp.'s X.400 transport service, which charges on a per-message basis. The other alternative would be to use the non-X.400-based Sprintmail wide-area mail network at a fixed monthly charge, the IRS explained.

The IRS Southeast region has 800 users on OSIware and expects that number to grow to 1,000 this year "for less than half of the annual cost of Sprintmail," Davis said.

Hardwarewise, the only investment the IRS made was in a dedicated Compaq Computer Corp. SystemPro server running The Santa Cruz Operation's Unix and OSIware software. It serves as a switching hub among the network segments.

Foley explained that the IRS customized OSIware's manual directory synchronization so that changes to the mail network are automatically updated enterprisewide. Meanwhile, the IRS intends to participate in a pilot of X.500 — X.400's directory counterpart currently undergoing interoperability testing by the three major long-distance carriers — next year.

"Right now, everyone in the IRS Southeast region can locate any other user in the region," Foley explained. OSI's X.500 would allow the region to expand that accessibility to all other X.500-listed users, he said.

Multitasking RAID for supercomputers debuts

BY JEAN S. BOZMAN
CW STAFF

SAN JOSE, Calif. — Maximum Strategy, Inc., a small Silicon Valley firm that has been building redundant arrays of inexpensive disk (RAID) systems since 1987, last week announced a multitasking RAID system for supercomputers and parallel processors.

The new RAID drive will go to beta-test sites this month, and general shipments are to begin in September, the firm said.

The firm's new Gen 4 product can handle RAID-1, RAID-3 and RAID-5 functions simultaneously on different disk regions. That way, disks can be set aside for RAID-1 mirroring, RAID-3 high-performance or RAID-5 error-recovery features.

"You can dedicate a set of disks to operate in one RAID mode or the other," said Omri Serlin, president of Itom International in Los Altos, Calif. That would suit scientific computing, which typically deals with large data sets that can hamper high-speed disk performance.

Del Masters, Maximum Strategy's chief executive officer, said Gen 4 would be able to handle 500 I/Os per second to the supercomputer or Unix server. Data will be transferred in 64K byte units, Masters said.

The Gen 4 RAID Storage Server can support as many as 40 disk drives with sustained throughput of 90M byte/sec. for reads and 85M byte/sec. for writes. It conforms with the international standard for high-speed data transfer and is compatible with supercomputers from Cray Research, Inc., IBM and Maspar Computer Corp. Prices range from $175,000 to $475,000, Masters said.

The California Institute of Technology, a user of Maximum Strategy's Gen 3 RAID device since February, has had little problem with reliability since the product was installed.

"Even when our large supercomputers had [operational] problems, the Maximum Strategy box kept going like a soldier," said Roy Williams, senior staff scientist at CalTech's Concurrent Supercomputing Facilities.

Small and proud

Maximum Strategy was privately funded and grew by sales of its high-end peripherals to large systems vendors such as IBM, said Gary Smaby, principal at the Smaby Group in Minneapolis. "They are a bootstrapped organization and proud of it. They've done it all on their own."

The 30-person firm designs RAID controllers — but does not build them — and then packages the controller with disk drives from other vendors.

Although prices for the RAID devices seem high, they are priced to be less expensive than those sold by supercomputer vendors, Smaby said. "It is definitely an impressive technology, but it is still aimed at a limited market," Smaby noted.

Manufacturers turn to imaging

On-line engineering documents spell efficiencies for companies

ANALYSIS

BY ELLIS BOOKER
CW STAFF

Speed to market, fewer mistakes and the ability to adapt products quickly are some of the reasons a handful of manufacturers have begun installing electronic document imaging systems.

In addition to conventional applications of imaging in their clerical departments, manufacturers are using imaging as a tool for routing drawings and technical documentation among designers, engineers and the factory floor. For one aircraft maker, this has reduced the time needed to process drawings from as much as eight days to only 12 hours.

According to BIS Strategic Decisions in Norwell, Mass., the manufacturing sector (comprising both discrete and process manufacturing as well as pharmaceuticals) accounted for $228 million of the $1.9 billion imaging market last year. But that share should grow. The research firm predicted that manufacturers will represent $358 million of the $2.35 billion imaging marketplace in 1992.

Like imaging users in commercial settings such as banking and insurance, manufacturers are looking to imaging as a way to control, streamline and automate the flow of records.

At The Boeing Co.'s Commercial Airplane Group, for instance, an imaging subsystem known as Reference Engineering Data Automated Retrieval System (REDARS) reduced the flow time of engineering changes by up to 90% and cut by 80% the amount of time engineers and others waited to see data.

Deployed in December and using a high-speed Fiber Distributed Data Interface backbone network connecting some 200 Sun Microsystems, Inc. workstations, Boeing's system has more than 1T byte of information on 140 optical discs. The database includes more than 3 million graphics images created by Boeing's computer-aided design (CAD) system.

John Dykes

In the past, these CAD images would have been output to microfilm and pasted onto so-called "aperture cards." This required a staff of 100 people to sort, file and fetch the cards. Another 10 million to 12 million obsolete aperture cards are stored in the paper files.

"We've also reduced the amount of time it takes to get a drawing released from engineering and sent to the factory floor from six to eight days down to 12 hours," said Norman L. Eddy, senior manager of systems management at Boeing Support Services in Seattle.

Along with engineering diagrams, REDARS contains all of Boeing's technical documentation and parts lists.

REDARS also highlights two

Continued on page 72

E-Mail = Emc²/TAO LAN

You've known **Emc²/TAO** for the mainframe for years — and now it's available for the LAN. **Emc²/TAO LAN** offers the same features and functions as **Emc²/TAO** on the mainframe — but with the sizzle of Windows on the desktop.

Emc²/TAO LAN is *very* well connected. It's the only LAN E-mail product offering totally seamless integration with its mainframe counterpart. That means central directory administration, centralized gateways, and scalability. In short — a comprehensive enterprise solution.

OFFICE INFORMATION SYSTEMS
the GARTNER GROUP

FISCHER INTERNATIONAL SYSTEMS CORPORATION
4073 Merchantile Avenue, Naples, FL 33942
(813)643-1500

Emc²/TAO

For your free copy of The GARTNER GROUP's Research Note on Emc²/TAO, call toll free
1-800-237-4510

Migration woes promise gold

BY MARK HALPER
CW STAFF

EL SEGUNDO, Calif. — For Gary Osborn, chief information officer at Hughes Electronics Space and Communications Division, choosing Unix servers for the division's operationwide downsizing project has been a head-spinning lesson in the politics and conundrums of open systems.

As the company talks to suppliers to determine which platforms to install for a three-phase move off its eclectic collection of mainframes and minicomputers, Osborn said he has been nothing short of confused.

"All the vendors say they are what they are and that everyone else is a liar," Osborn noted. "I'm having a difficult time sorting it out."

Osborn's difficulties have not, however, prevented him from proceeding with some decision-making: He has tapped Hewlett-Packard Co. for four HP 9000 Series 847s for the first phase of the project.

No more going without

The first stage is an ambitious one: Putting integrated computing power in the hands of hundreds of designers, shop floor workers and business managers who until now "have simply gone without" the strategic information that the distributed HP system will start putting in their hands later this month, said Chris Pidgeon, chief information technologist at the division.

When the project is completed later this year, roughly 800 personal computers and Apple Computer, Inc. Macintoshes will tie into the HP 9000, accessing an integrated applications package called Cambridge from Cambridge Technology Partners that ties together information from Hughes' finance, scheduling, material, inventory, engineering and manufacturing operations.

In the company's current hierarchical model, information access for hundreds of shop floor workers, warehouse folks and designers typically means contacting a crony in Hughes' information systems shop who taps the requested data and then delivers it by paper, mouth, disk or some other medium. "Sneakernet" has been the norm here. The goal is near-instantaneous access.

"It takes them a week: They have to go through eight people and collect information in different media," Osborn noted. "By the time they get the information, it's useless."

These people include designers who need access to information, program managers responsible for building products and group business managers.

The workers have access to about 60 PCs now, but they use them to run basic spreadsheet applications, Osborn said. Hughes will tie the 60 into the HP 9000s just as it will the other 740 or so, through Transmission Control Protocol/Internet Protocol connections over Ethernet. The company plans to install 400 of the new machines by the end of this month and another 400 by year's end.

The company will also tie about 150 Sun Microsystems, Inc. workstations into the Cambridge software after it brings the PCs on-line, Osborne said. Those workstation users are designers who do not require business information as often as operations people. "We don't put them in a category of being decision makers," Osborn said.

Moving off the mainframe

In other downsizing plans, Hughes plans to take its manufacturing resource planning (MRP) software off the mainframe starting in the first quarter of 1993 and to move its engineering data off in the third quarter.

But, as it expands Cambridge with two more Unix servers and moves toward open MRP and engineering data solutions, Hughes will not necessarily choose the HP 9000 every time.

"It'll all boil down to price and performance," Osborn said. "We're right now benchmarking Sun to see if it could perform equal to or better than HP."

One consideration is what software is available for each platform. In the MRP evaluation, the company has decided to use Computer Associates International, Inc.'s CAS/AD, which CA recently announced it is migrating to HP's HP/UX operating system — CA's first large system Unix port.

But, according to Osborn, CA also plans to make the program available for Sun platforms, so Sun is very much in the running for the MRP job.

If Osborn and his staff are caught up in Unix fever, they have apparently not been completely swept away. Osborn noted that the company will continue to use a 3090 mainframe for financial programs that provide information on labor costs, purchase rates and subcontract conditions.

Osborn's reasoning on the financial program may be no more complicated than his hands are tied. His division shares the 3090-based financial information with other Hughes divisions from the parent's mainframe. "It's a corporate system, so I doubt I'll be coming off it," Osborn said.

ON SITE

Hughes Electronics Space and Communications Division
El Segundo, Calif.

Gary Osborn, CIO

- **Challenge:** To put integrated computing power into the hands of designers, shop floor workers and business managers.
- **Technology:** Hewlett-Packard HP 9000 Unix systems, 800 PCs and Cambridge Technology Partners software that ties together information from diverse operations.
- **Goal:** To reduce from one week to only seconds the time it takes to gather information from varied sources.

Manufacturers using imaging for documents

CONTINUED FROM PAGE 71

of the unique requirements of imaging in manufacturing: graphics and interfaces to CAD systems.

While banks, insurance companies and other commercial imaging sites have some need for graphics, notably for signature display and verification, a significantly larger percentage of the paperwork at a manufacturing company is devoted to technical drawings and schematics. REDARS, for instance, not only imports and exports data to a parts and document "accountability" system, but it also works with Boeing's CAD system.

According to some analysts, creating these CAD-to-imaging interfaces can be tricky because the graphics in imaging systems are raster-based, whereas CAD systems use vector graphics.

On the other hand, some manufacturers have found the process worth the work because the imaging system becomes a kind of common denominator for incompatible CAD systems.

This has been one of the benefits of the Apple Document Management and Control System (ADMACS), Apple Computer, Inc.'s 18-month-old global imaging system. ADMACS provides on-line access to more than 120,000 pages of drawings and product documentation (see story at right).

At Apple and other manufacturers, imaging coupled with document management and work flow software have also virtually eliminated the problem of building a part based on a design that has been modified and is no longer the current version.

The Gillette Co.'s North Atlantic Group is using an imaging system from Cimage Corp. in Ann Arbor, Mich., to store what will total more than 100,000 technical documents by year's end.

Like many manufactures, Gillette has maintained vast libraries of microfilm aperture cards to hold its technical documention. "It was a nightmare controlling these documents; we were drowning in a sea of paper," said Ed Ryan, group manager of project management and implementation at Gillette.

A final application of imaging in manufacturing relates to customer support.

Last year, Knoxville, Tenn.-based Whirlpool Corp. installed an imaging system from Online Computer Systems, Inc. in Germantown, Md. The imaging system provides customer service agents with access to two decades worth of service and product manuals [CW, Oct. 28, 1991].

In a recent member survey by the Association for Information and Image Management, 56% of the manufacturers responding said they were using imaging today; another 29% said they were investigating imaging.

Turnaround on a dime

When Jackie Streeter joined Apple Computer, the company built one kind of Macintosh.

When that changed and Apple began filling out its Macintosh line, Streeter, manager of worldwide product configuration management, began looking at alternatives to the paper-based system for tracking and exchanging engineering documents.

The result was ADMACS, or Apple Document Management and Control System.

With its core software from Alpheral, Inc. in Camarillo, Calif., and system integration services from Electronic Data Systems Corp., ADMACS was piloted 18 months ago; for the past year, it has been the official repository for some 120,000 Apple engineering documents.

Aside from substantial productivity gains, Apple has used ADMACS as a common window onto its diverse CAD systems.

Instead of arming each employee who needs access to the on-line drawings with "a $40,000 to $50,000 workstation, each loaded with $20,000 to $30,000 worth of CAD software," Apple is using its own Macintosh as the client for the imaging system, according to Tom Minick, director of information systems at the Apple Product Division.

About 600 employees have access to ADMACS today. The ADMACS host is a Digital Equipment Corp. VAX in Napa, Calif.

But Minick noted that because Apple elected to use the Macintosh — typically, a 4M-byte machine running Apple's System 7.0 operating system — and send the images across the corporate Transmission Control Protocol/Internet Protocol network, access to the engineering documents is theoretically available from every employee's desktop.

Before ADMACS, turnaround time for design changes could be as much as 25 days, with diagrams on microfilm frequently shipped back and forth to Apple's manufacturing sites worldwide.

Today, turnaround is 30 days and dropping. "Some changes are down to one day," Streeter said.

Streeter stressed that in addition to imaging, the ADMACS project was taken as an opportunity to redesign many business processes at Apple, resulting in even more efficiency.

In fact, that standardization of processes helped win Apple ISO/9000 certification on its first attempt — a rare feat. A European Economic Community business license, ISO/900 mandates standardized business procedures.

ELLIS BOOKER

Printers built for the long run.

Complete and return this postage-paid card for more information about GENICOM's family of long-running printers, supplies and service. For faster response, call **(800) 4-GENICOM Dept. C,** or fax card to (703) 949-1392.

(please print)

Name_____

Title_____

Company_____

Address_____

City_____ State_____ Zip_____

Phone( ) _____ Fax( ) _____

1. I'm interested in:
   ☐ Laser printers ☐ Matrix printers
   ☐ Line printers ☐ All

2. What are your applications?
   (please check all that apply)
   ☐ Bar codes ☐ Duplexing ☐ Large format
   ☐ Multipart forms ☐ Text ☐ Graphics ☐ Other

3. When will you be purchasing printers?
   ☐ 0-3 months ☐ 4-6 months ☐ 7-9 months
   ☐ 9+ months ☐ No current plans

4. How many printers do you plan to purchase during the next 12 months?
   ☐ 1-5 ☐ 6-10 ☐ 11-25 ☐ 26-50 ☐ 50+

5. ☐ Please check this box if you would like to have a GENICOM representative call you.

GENICOM®

Printers built for the long run.

One Genicom Drive ■ Waynesboro, VA 22980-9942

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO.124 WAYNESBORO, VA

POSTAGE WILL BE PAID BY ADDRESSEE

GENICOM®

One Genicom Drive
Waynesboro, VA 22980-9942

NEW PRODUCTS

Software application packages

Integral Midrange, a division of Integral Systems Co., has enhanced the IBM Application System/400 versions of Integral's Human Resource and Financial products with Release 5.0.

Release 5.0 contains Systems Application Architecture-compliant commands and features color support and full use of all AS/400 utilities. Tools that control human resources-related functions are provided.

Users can manage enterprisewide financial accounting and management functions such as budgeting, automated internal processing, integrated cash management and multilevel processing.

Prices start at $11,400.

Integral Midrange
2185 N. California Blvd.
Walnut Creek, Calif. 94596
(510) 939-3900

Database management

Management Information Technology, Inc. has started shipping an enhanced version of DBAMaster.

DBAMaster 2.0 was designed as a four-function, automated monitoring and tuning device that lets Oracle Corp.'s database users detect and avoid potential system-crippling problems.

New features in this release include remote monitoring and multidatabase support, reduced storage requirements, tuning of the Oracle Parallel Server and support for Oracle Version 6.2. Row-level and chaining analysis, production reports with full table scan and monitoring over SQLNet are other new features.

Pricing begins at $2,500.

Management Information Technology
2895 Temple Ave.
Long Beach, Calif. 90806
(310) 424-4399

BrownStone Solutions, Inc. has enhanced Version 5.0 of its DataDictionary/Solution.

Enhancements include Scripting, Forms Facility and DDSMail. According to the company, Scripting offers users the ability to automate complicated dictionary tasks such as restructuring DB2 tables. Forms Facility provides external layouts that display a user view of a data dictionary without altering the underlying object definition. Users can send messages and receive results of automated operations via DDSMail.

Prices start at $60,000.

BrownStone Solutions
295 Madison Ave.
New York, N.Y. 10017
(212) 370-7160

Data storage

Ten X Technology, Inc. has developed the OptiChanger 28, a five-cartridge drive optical subsystem.

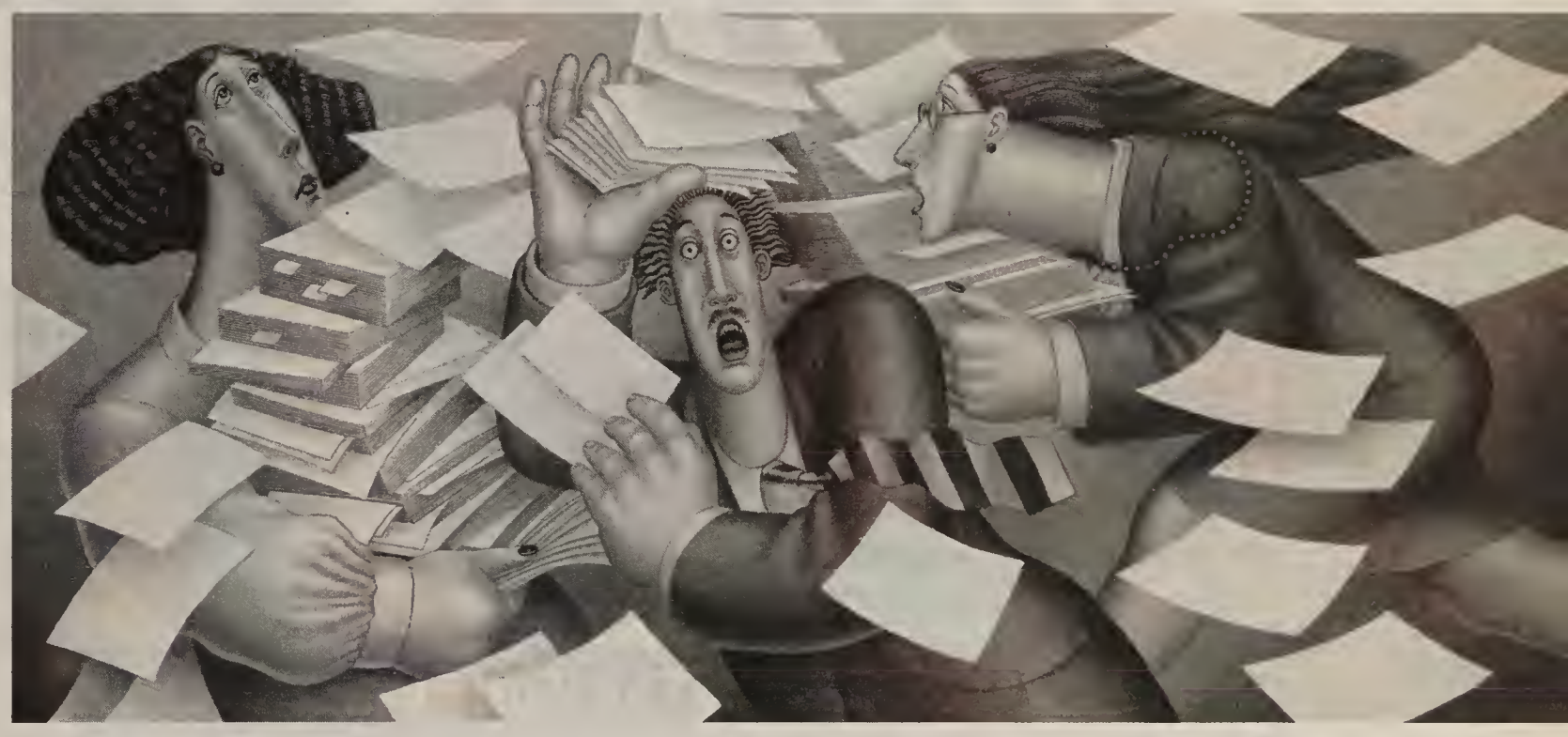
OptiChanger 28 uses 12-in., 5.6G-byte write-once read-many cartridges, which provides Sun Microsystems, Inc. Scalable Processor Architecture II users access to a minimum of 28G bytes of permanent data storage. OptiChanger 28 includes simultaneous access to both disk sides, fast disk spin up, spin down and disk exchange times.

The product does not require software drivers, and it features hardware data compression and 512K bytes of nonvolatile static random-access memory for enhanced cache buffering.

OptiChanger costs $39,950.

Ten X Technology
Suite 3200
Building 3
4807 Spicewood Springs Road
Austin, Texas 78759
(512) 346-8360

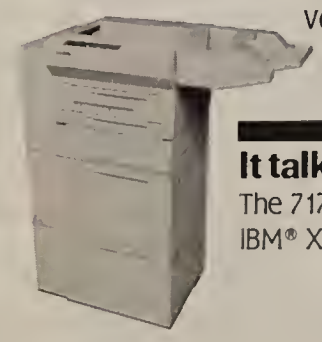
Our new laser printer doesn't make paperwork.



It makes paper work.

Introducing the GENICOM 7170. Superior paper handling solutions for network laser printing.

Our new 17 ppm laser printer lets you put four paper-feeding sources online at one time. Start with dual 250-sheet input cassettes. Then add a duplexer for two-sided printing, a 1500-sheet high-capacity feeder for long jobs and a multipurpose feeder for envelopes, transparencies and labels. Now output to either a 1500-sheet stacker or a 10-bin mailbox sorter, and your very flexible, very affordable workgroup laser printing system is complete.



It talks the talk.

The 7170 features resident PCL 5® and IBM® XL24E emulations. And the optional PostScript® language compatible interpreter provides automatic emulation sensing. Parallel, serial, AppleTalk®, Novell® Ethernet and Token-Ring interfaces are available.

A clear edge in print quality.

Edge-enhancement technology and 300 dpi resolution provide super sharp print quality. A vast array of scalable and bitmapped font styles are resident.

Workgroup-rated performance.

With the 7170, your whole workgroup can print sophisticated graphics and text up to 50,000 pages per month. And like GENICOM's entire family of business printers, the 7170 is backed by our worldwide service and support network. So put your paper to work today, call us at **1-800-4-GENICOM ext. 52.**

GSA Schedule approved.

© 1991 GENICOM Corporation.
All company and/or product names are trademarks or registered trademarks of their respective owners.

GENICOM®

Printers built for the long run.

One Genicom Drive ■ Waynesboro, VA 22980

RECRUITING TALENT FOR NEW JERSEY?

Advertise in the September 14th Eastern Edition when *Computerworld's* regional Careers feature examines "IS Careers in New Jersey." Ad Close: September 10.

800 343-6474 ext. 201

Borland's Why it's smart

The #1-selling database

dBASE® is the #1-selling relational database in the world. It offers the most complete set of tools for developers and users to access and manage their corporate data.

Today, more than three million people use it to build applications that help them run their businesses and maintain a competitive edge. And with the world's largest community of trainers, consultants, and add-on software extensions, it's little wonder that dBASE is the standard for corporate applications development. Now, new dBASE IV version 1.5 makes it smarter than ever to go with #1.

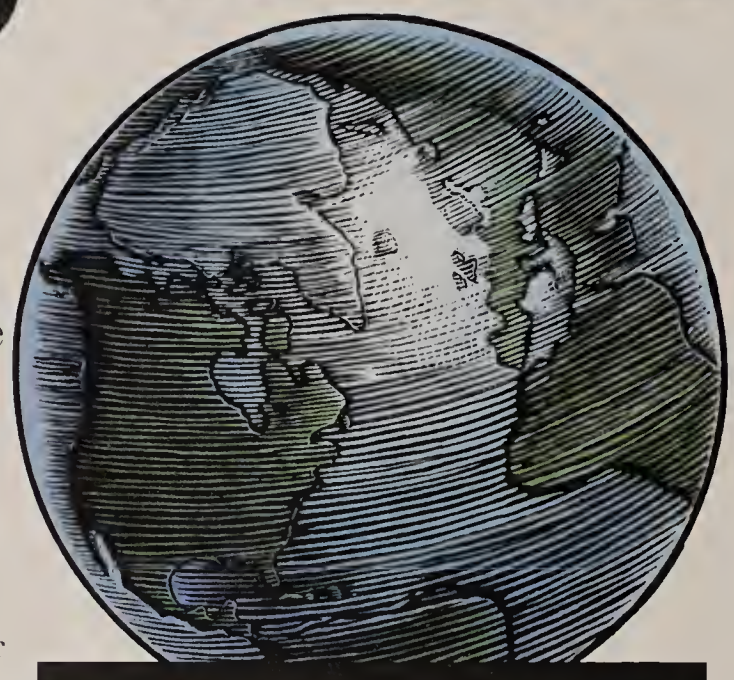
New! Version 1.5 is here

Now there's an easier-to-use, faster, and more powerful dBASE. It's packed with the features you've asked for most, making it smarter than ever to use the world's #1 PC database.

Working smarter is faster

OPTIMIZATION IQ! TECHNOLOGY

With new dBASE IV, you get the job done faster because you work smarter. Smarter because new **IQ!**™ optimization technology automatically selects the fastest method to retrieve your data. Smarter because you can create tables, forms, reports, queries, and menus in record time—without programming.



The Worldwide Standard

What's new in dBASE IV v1.5:

For Users

- Mouse support
- Editable multi-file view
- Calculated field linking
- QBE summary operators and pick lists
- Automatic install
- New optimization technology—**IQ!**
- Save query indexes

For Developers

- INDEX functions
- 40 work areas
- Template Language included
- Enhanced BLANK support
- Browse/Edit organize menu toggle
- Conditional compilation
- Low-level file I/O
- Open architecture Control Center
- Enhanced RUN function
- Multiple and global procedure libraries

Smarter because you get 40 different work areas for easier management of large applications. Plus mouse support for fingertip access to features, an enhanced RUN function to run popular DOS applications from within dBASE, and comprehensive multi-user capabilities. All of which means you maintain tight data integrity, more flexibility and more support than ever before.

40 Different Work Areas • New Commands

Advanced design tools build applications faster

dBASE IV's easy-to-use Control Center comes complete with an innovative set of design tools, including report, form, and label generators that help you create your applications quicker. And the Control Center's open architecture makes it easy to enhance or customize your own applications by incorporating third-party add-on products available for dBASE.

Copyright © 1992 Borland International, Inc. All rights reserved. dBASE, dBASE IV, Borland, and Ashton-Tate are registered trademarks of Borland International, Inc. BI 4503

dBASE IV®
er to go with #1

Faster applications development

The industry-standard dBASE language comes with a host of improvements that speed development:

- Integrated debugger and a built-in applications generator
- More than 40 new commands, functions, and keywords—Template Language now included
- C language–like low-level file I/O
- IBM® SAA-compliant SQL
- Advanced BLANK support

100% commitment to dBASE

Now that it's from Borland, your investment in dBASE is secure. dBASE gives you all the benefits of complete compatibility and application portability that come with *the* database standard. And Borland is the acknowledged database technology innovator, so you're on the winning team for the long haul. Get dBASE IV v1.5 today. You'll see why it's smarter than ever to go with #1.

COMMITMENT 100% GUARANTEED

Get NEW dBASE IV v1.5 today and receive more than $250 in additional software,

60-DAY GUARANTEE MONEY-BACK

FREE!

See your dealer or call now 1-800-331-0877, ext. 6443.

In Canada, call 1-800-461-3327.

Send me my FREE Pro Pack Software!

Purchase dBASE IV v1.5 and Borland will give you Central Point Software's Backup and Anti-Virus programs *free.** That's a suggested retail value of $258. Offer good while supplies last.

Check DOS disk size required: ☐ 5 1/4" ☐ 3 1/2"

dBASE IV v1.5 Serial #:_____

Name:_____

Company:_____

Address:_____ (We cannot ship to P.O boxes.)

City/State/Province:_____

Zip/Postal Code:_____ Phone: ( )_____ FAX: ( )_____

COMPLETE this coupon, ATTACH a copy of your sales receipt (or a copy of purchase order and billing invoice) AND ENCLOSE $9.00 U.S. for shipping and handling (check or money order payable to Borland International, Inc.).

Send to: Borland's Pro Pack Offer, P.O. Box 7243, San Francisco, California 94120-7243.

*Offer good in U.S. and Canada only on dBASE IV v1.5 purchases. Offer good while supplies last. Only original coupons will be accepted. No responsibility is assumed for lost, late, misdirected, or destroyed mail. Please allow 4–6 weeks for delivery. Subject to all local, state, and federal regulations. Void where prohibited. Offer not valid for Upgrades, Competitive Upgrades, LAN Packs, Volume Packs, or any other Borland promotion except dBASE IV v1.5 products. Distributors and resellers not eligible to participate. Central Point is a registered trademark of Central Point Software.

BORLAND

dBASE IV from Ashton-Tate® a Borland Company

THE USEFUL MEASURE OF APPLICATION DEVELOPMENT SOFTWARE IS BEYOND QUESTION.

Companies throw out all kinds of claims about the value of their application development software. But how valuable are applications to people who can't easily use them? At Cognos®, we've combined the industrial strength of PowerHouse® 4GL with the easy-to-use client/server technology of PowerHouse Windows™. The result is an unprecedented combination of power and ease of use. So trash any notions you may have about traditional application development software and call us.

COGNOS®

OPEN TOOLS FOR A CHANGING WORLD.

1-800-4-COGNOS or **617-229-6600 ext. 81.** (In Canada, **1-800-361-3163.**)

© 1992, Cognos, Incorporated. Cognos and PowerHouse are registered trademarks and PowerHouse Windows is a trademark of Cognos, Incorporated. Cognos supports all major commercial UNIX and midrange platforms.

IN BRIEF

Focus 4GL upgraded for AS/400

■ **Information Builders, Inc.** announced an upgraded version of Focus 4GL for IBM's Application System/400. Available immediately, Release 5.8 sports enhanced report writing and decision support modules, the company said. Prices range between $3,000 and $100,000.

■ Shortly after announcing a merger with **AICorp, Aion Corp.** introduced Logic Management System, a tool designed to let users — rather than information systems workers — modify an application's business process rules. The $2,000 to $5,000 product is currently in beta testing, with general release scheduled for later this year. Both companies emphasized that despite the merger, each firm's product lines would remain distinct and consistent with separate statements of direction that were outlined earlier this year.

■ Ada supplier **Meridian Software Systems, Inc.** in Irvine, Calif., has entered into a definitive agreement to be acquired by **Verdix Corp.** in Herndon, Va. Verdix, which develops embedded computer, technical computer-aided software engineering (CASE) and secure systems products for government and industry, will swap 1.2 million shares of its common stock — about 8% of its outstanding shares — for Meridian stock.

■ **Borland International, Inc.** will begin bundling **ProtoView Development Co.**'s ProtoGen Application Generator CASE tool with its Borland C++ Version 3.1 compiler and its Borland C++ and Application Frameworks 3.1. ProtoGen is an ANSI C code generator for interface design and implementation.

Development centers battle to get it done

BY GARRY RAY
CW STAFF

Call them application development centers, application enabling centers or technology centers. Whatever the name, they provide their organizations with evaluations, guidance and implementations of "bleeding-edge" development tools and methodologies.

But their unique role in the information systems organization and in the company as a whole poses some challenging management problems. Chartered with examining such diverse concerns as strategic planning, joint application development, systems planning, data modeling and everything in-between, application development centers often cannot implement the tools and methods they have discovered.

According to Jerry Weinberg, a Lincoln, Neb.-based consultant on IS and organizational change, "For every 100 development centers, 75 know what to do, and only 10 actually get the organization to do it."

Historically, application development centers have suffered from the problem of having a clear mandate to explore and evaluate advanced technology but little means or capacity to implement it in their companies.

At Texaco USA in Houston, an early attempt to create an application development center resulted in a "failure to implement because there was no mandate to do so," said Walter Viali, manager of the company's IS Enabling Center.

Even where there is a mandate to implement new tools and technologies, application development centers often meet substantial resistance from programmers and other IS staffers. The problem, Weinberg said, is "an emotional issue, not a technological issue."

Internal battle

According to Viali, "The initial clash was ferocious because development center people are very technical and perfectionists." The interests of these champions of leading-edge technology "were colliding with [programmers], who have a vested interest in the status quo," he said.

To solve the problem, Texaco placed Viali in charge of its application development and development center organizations. "I have some idea of where I'm going, and I'm not afraid of ruffling feathers or stepping on toes," he said. "That motivates them."

Most development center managers agreed that the vision of a leader was critical to the center's success. "The most important thing is to allow [staffers] to go out on their own, but with a vision of the way things should be," said Ron Gualtieri, a computer scientist and development center leader at EG&G Florida, Inc., a NASA contractor at Kennedy Space Center in Florida.

Gualtieri also makes sure his team is recognized internally through regular participation in a company newsletter and other public relations efforts, such as training members of the computer center in new technologies and keeping them posted on "our strategic direction over the next five years," he said.

Happier and busier

"What we're trying to do is to increase morale and the ability of the staff to get things done," said Dennis Farley, president of the Development Center Institute, Inc. and a development center manager at Ameritech Services in Indianapolis.

Using research from Zawacki and Associates, a Colorado Springs consultancy that has profiled a number of application development centers, Farley has been giving staffers more feedback and has been "structuring their jobs so that there aren't so many distractions," he said.

Robert Zawacki, principal of the Colorado firm, said in his recent study of development centers that staff members should be given more feedback and autonomy in their jobs. They also need to see the "wholeness of the project" and its relevance to the organization in order to be effective, he said.

Cardinal rules

Key steps in motivating the application development center staff:

- **Create development center teams** that have a mixture of those who initiate and those who respond to new ideas.
- **Close the loop.** Structure development center positions to include general and specific, goal-directed feedback.
- **Provide more autonomy.** Set goals, give deadlines, and then back off.
- **Increase skill variety.** Development center staff members are learners and should have a forum to explore new ideas and technologies.
- **Increase task identity** — the wholeness or completeness of the project — by allowing staffers to visit user and staff meetings.
- **Increase task significance.** Reinforce the importance of the application development center by allowing personnel to give status reports and presentations.

TI speeds up Unix move through Sequent deal

BY KIM S. NASH
CW STAFF

DALLAS — Texas Instruments, Inc. has agreed to port its computer-aided software engineering (CASE) tools to Symmetry 2000, a line of high-end Unix-based machines from Sequent Computer Systems, Inc. The move is part of TI's strategy to lure customers looking to "right-size" systems from proprietary mainframe environments to smaller Unix systems.

Observers said TI is ahead of integrated CASE rival KnowledgeWare, Inc. in Atlanta in terms of development tools for Unix. KnowledgeWare said it is working on Unix tools and pegged 1993 to 1994 for their debut.

Meanwhile, vendors such as Cadre Technologies, Inc. and Interactive Development Environments, Inc. have built market share among technical Unix users.

Double dealing

IBM and Hewlett-Packard Co. signed separate deals eight months ago with TI [CW, Jan. 27]. TI's Information Engineering Facility (IEF) also runs on Unix hardware from Digital Equipment Corp. and Tandem Computers, Inc.

However, what makes the Sequent deal different from the others is the Symmetry 2000's capacity for on-line transaction processing in an open environment, according to Roy Brittain, vice president of business development at TI's Information Technology Group.

An early user agreed: IEF-built applications run on the Symmetry 2000 "achieve three to five times the price/performance . . . compared with proprietary mainframes," said Steve Darrow, president of Claremont Consulting Group, Inc., a CASE consultancy in Beaverton, Ore.

It was fully integrated CASE for Unix, not economics, that attracted Oregon's Department of Environmental Quality to the IEF/Symmetry combination, according to Dennis Kirk, information systems manager at the department. The state agency, located in Portland, has started building new systems with IEF in a 3-year-old Symmetry environment. IEF replaces an ad hoc mix of report writers, forms generators and a fourth-generation language from Oracle Corp.

The department will keep Oracle's database management system but will throw out Cobol and Fortran tools, Kirk said.

"Environmental legislation changes continuously, and those tools don't let us alter programs quickly enough," Kirk explained, noting the 60- to 90-day limits tied to many new laws. Reusable IEF models let Kirk's staff locate appropriate blocks of code quickly and save programming steps, he said.

> WHAT MAKES THE Sequent deal different from the others is the Symmetry 2000's capacity for on-line transaction processing in an open environment.

For Sequent, the agreement is part of an effort to expand beyond its speciality markets, such as financial and scientific processing, into more mainstream commercial computing.

Sequent, also based in Beaverton, will sell Symmetry 2000 systems bundled with IEF by the end of this year. However, the IEF Central Encyclopedia, a repository needed for large-scale CASE projects, is not scheduled for release until early next year.

HEY... DID YOU EVER GET MY MEMO?

WordPerfect® answers the most-asked question about electronic mail.

Click on "Send" in many of today's e-mail packages, and the urgent message on your screen will disappear, perhaps never to be heard of again.

You'll have no way of learning if it was ever delivered, or opened. You'll have no way of checking what you sent to whom, or when. And if you ever need to retract a message for corrections, well, *no way*.

So it's no wonder that in surveys of the features users would most like to see incorporated into their e-mail packages, message tracking ranks at or near the top. Except, that is, in surveys of WordPerfect® Office users.

An In Box Is Not Enough

In addition to the In Box that every e-mail package offers, WordPerfect Office gives you an electronic Out Box. So in addition to all the usual things you'll be able to do with your incoming mail (including read, reply, forward, save and print), we give you unusual control over your *outgoing* messages as well (including the ability to reread, rethink, rewrite and retract).

And the Out Box is just one of the features that separates WordPerfect Office from the rest of the e-mail pack.

E-Mail Everyone Can Agree On

If people would simply agree on a single computer platform, hooking everyone up with an e-mail system would be no trick. But since *that* shows no signs of happening, WordPerfect Office is available for all of the most popular platforms, including DOS, Windows, Mac, UNIX, VAX and Data General.

With WordPerfect Connections (included in Office 3.1), a DOS and Windows LAN can connect seamlessly (and transparently) with VAX and UNIX LANs, for example. So a message that goes out in Windows can arrive in UNIX and lose nothing in the translation.

Getting Your Message Out

Far-flung empires will find WordPerfect Office equally accommodating, with gateways to messaging systems that include Novell MHS, IBM OfficeVision, DEC, X.400, SMTP, MCI Mail and AT&T EasyLink, among others.

And unlike e-mail packages that simply deliver the mail, WordPerfect Office includes powerful Calendar and Scheduling functions that provide entirely new ways for your people to work together productively.

Let Us Show You How It Works

With WordPerfect Office, the possibilities are nearly limitless. And the technical support for users and administrators is widely acknowledged to be the best in the business. To learn more, contact your WordPerfect Representative, or for a free video demonstration, call (800) 526-5064.

(Until you have a more effective means of business communication up and running, the telephone will have to do.)

WordPerfect®

WORDPERFECT IS A REGISTERED TRADEMARK AND WORDPERFECT OFFICE IS A TRADEMARK OF WORDPERFECT CORPORATION WITHIN THE UNITED STATES AND OTHER COUNTRIES. ALL OTHER BRANDS AND PRODUCT NAMES ARE TRADEMARKS OR REGISTERED TRADEMARKS OF THEIR RESPECTIVE COMPANIES. ©WORDPERFECT CORPORATION 1992

COMMENTARY

Martin Healey

Options to ponder when downsizing

The unavoidable problem with downsizing is that the new system is different from the old one. The new computer should be state-of-the-art technology that is cheaper than the old one, but the total cost of ownership needs much more consideration.

Unix systems, for instance, are relatively cheap to buy. But to make a comparison with, say, the IBM AS/400, you must add the price of a database management system, compilers or 4GLs and system management tools before a fair comparison can be drawn.

In most cases, Unix system management tools are relatively underdeveloped and can result in increased costs. With distributed systems, for example, "community management" tools are anything but established products, although there are hopeful signs from HP, ICL and Siemens-Nixdorf.

The right way

While getting the system environment wrong can be costly, the potential for getting the applications wrong is even greater.

There are two basic approaches to creating the applications for the new "downsized" system: developing them in-house or buying a packaged solution.

If programs are to be developed anew, now is the time to exploit different techniques. Relational databases, CASE tools (particularly for business analysis and system design), 4GLs and client/server architectures with GUIs are all serious candidates for consideration.

Use REXX for all procedure automation routines as well. It is the only job-control language (JCL) supported on multiple platforms, and it is good. It hurts to see people struggling with Unix shell scripts when the proper tools are available.

Rather than follow traditional development paths, packages normally have far more to offer today. Indeed the major drawback to packages is the "not-invented-here" syndrome because the same people who were responsible for developing older applications must control the implementation of the package. The cases where packages have been failures (apart from picking an inappropriate or simply bad product) are due to a lack of cooperation by both in-house programmers *and* end users.

Not-invented-here among users is as bad, if not worse, than among programmers. It is reasonable to expect some changes to business practices to fit the package if they are not radical.

Handle with care

A package is a building kit and should be treated by in-house staff as a very high-level language. It needs configuration and all the training and management procedures must be effectively implemented. The package will probably only achieve 80% of the requirements — the other 20% must be provided by specifically developed code.

But never modify the package code, or else future releases will cause trouble. And never accept a package for which the data structures are not fully specified and available for new programs. Avoid packages written in C or Basic unless an alternative cannot be found.

Packages offer a share of accumulated knowledge about applications because there is feedback from multiple users. However, the other source of accumulated knowledge is the older systems being replaced. Therefore, there is a temptation to convert the old programs to run in the new environment.

Code conversion, and the associated JCL and data conversion, is difficult and much more expensive than is often admitted. The key problem is that the mainframe provides both batch and teleprocessing services with the same databases. The batch, however, is optimized to take advantage of sequential processing with data prefetch, sorting and direct indexing. The new "downsized" system will be basically time sharing that does not provide any special batch capability or specialized transaction processing monitor.

In all fairness

To be fair, the RDBMS provides all basic services, such as transaction logging, roll-back and forward, etc., but an application system designed for mixed batch and transaction processing will never fit comfortably in a mainly interactive/transaction processing environment. Thus, even if the old code and data can be converted, the new application will be clumsy and will not exploit the technology of the new system. The danger of code conversion is finishing up with the worst of both worlds.

If it is difficult converting from one batch/transaction processing environment to another, conversion to an interactive environment will cause serious problems. Conversion would need to show major cost advantages to win over introducing a packaged solution today.

Healey is a consultant based in Cumbran, England

Apple rolls out tool upgrades

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. recently unveiled a platter of programming tool upgrades that include refreshed versions of MacApp, the Macintosh Programmer's Workshop (MPW) and MPW C++.

MacApp 3.0 is the latest version of Apple's object-oriented application framework and class library for Macintosh programmers. It equips developers with the objects needed to program standard elements of Macintosh applications such as scroll bars, multiple windows, printing, cut and paste, Undo and menus.

Version 3.0 adds System 7.0 support and a new version of the MacBrowse source code browser/editor and the ViewEdit interface building tools. It will be available for $395 on disks and $350 on compact disc/read-only memory (CD-ROM). Upgrades cost $250 and $200 on disk and CD-ROM, respectively.

Full of features

MPW Version 3.2.3 updates Apple's professional software development environment. It provides a foundation on which to create applications with features such as multiwindow editor, integrated compilers and tools, a full scripting language, a source-code control system and the ability to link together code written in multiple languages.

Version 3.2.3 adds tool performance improvements, command reference features and compatibility for Apple's high-end Macintosh Quadra. The upgraded development environment will sell for $150. An update will cost $25.

MPW C++ Version 3.2 is an object-oriented C++-to-C translator, designed to work with MPW C and the MPW Development Environment. Apple has enhanced C++ to support the Macintosh Toolbox and operating system, object-based functions and procedures. It will sell for $175, and an upgrade will cost $75.

The tools will be available through APDA, Apple's source for developer's tools, both as stand-alone objects and on the E.T.O. No. 8 Essentials. Tools. Objects CD-ROM, a CD-ROM based quarterly of Apple's software development tools. Site licenses and bundled applications are also available.

NEW PRODUCTS

Languages

Qualix Group, Inc. has announced the C++ Starter Kit, a collection of software and tutorial materials.

The kit was designed to be used with Sun Microsystems, Inc.'s Scalable Processor Architecture-based workstations. According to the company, the goal of the Starter Kit is to provide Unix users with an affordable way to learn C++ and to understand the object-oriented programming techniques that C++ supports.

The product consists of a Sun file system compact disc that has sample libraries and programs.

The kit costs $99.

Qualix Group
Suite 224
1900 S. Norfolk St.
San Mateo, Calif. 94403
(415) 572-0200

Code libraries

Carnegie Group, Inc. has released Rock 2.1, a frame-based, high-performance technology engineered for knowledge and information representation.

A C++ library, Rock 2.1 was designed to develop appplications that need the integration of complex data relationships and knowledge. The product features a new Interpreter module that lets users dynamically browse, modify and interact with a Rock (Representation of Corporate Knowledge) knowledge base during development, the company reported.

Enhancements include interprocess communication in a client/server environment, integration with relational databases and permanent storage of the knowledge base in an integrated frame base.

The base Rock development library costs $7,800.

Carnegie Group
5 PPG Place
Pittsburgh, Pa. 15222
(412) 642-6900

Application development tools

NeuralWare, Inc. has announced NeuralWorks Professional II/Plus, a neural network development tool for use on Silicon Graphics, Inc.'s Iris line of reduced instruction set computing-based systems.

The product was written in C and offers prototyping and concept testing of neural network designs for a number of data-intensive, time-sensitive and quality-dependent applications, the company reported. Features include an open architecture, graphical user interface and support for more than 22 major neural network types.

Neural Works Professional II/Plus costs $4,995.

NeuralWare
Building IV
Penn Center West
Pittsburgh, Pa. 15276
(412) 787-8222

Sky Computers, Inc. has announced Skyvec Release 3.0.

The product is a software tool kit designed for the Skystation and Skybolt application accelerator product lines. This release includes Skympx multitasking executive, a feature that simplifies software development and execution in application environments involving several tasks, the company reported.

Skyvec Release 3.0 prices start at $5,000.

Sky Computers
27 Industrial Ave.
Chelmsford, Mass. 01824
(508) 250-1920

Micro Focus has released Version 3.0 of Micro Focus 370 Assembler with Animator/370.

The Animator/370 is an advanced debugging tool that lets users analyze programs during execution. The company said the product was designed to allow mainframe users to use a personal computer to support standalone assembler or Cobol programs housing Dynamic Calls to assembler.

New features include Animator/370, On-Line Help and extended file handling.

Part of the Animator/370 is the Help/370 facility, an on-line description of the 370 instruction set. The extended file handler provides additional file processing capabilities and has a define-cluster option.

The full development set costs $1,250.

Micro Focus
2465 E. Bayshore Road
Palo Alto, Calif. 94303
(415) 856-4161

SmartStar Corp. has released Version 6.1 of SmartStar VMS, a VAX/VMS application development environment. SmartStar VMS now offers support for The Ask Cos.' relational database management system.

According to the company, enhancements have been made to the SmartStar Logical Database for heterogeneous database access. When the product is used in conjunction with an optional SmartDistributor component, users can simultaneously access a variety of database types. Features such as pop-up windows, pull-down menus and an OSF/Motif-like windowing interface are included.

Prices range from $2,000 to $140,000.

SmartStar
120 Cremona Drive
Goleta, Calif. 93116
(805) 685-8000

The new spin-offs

U.S. companies are trying to turn technology investments into cash with start-ups in a hot new field: Computerized distribution logistics

Tom Zimberoff

Menlo Logistics' Williford: *'Information is the key element to the logistics challenge'*

BY JULIA KING

When Jim Reeder joined Commodore Business Machines, Inc. as vice president of customer satisfaction, the West Chester, Pa.-based computer company had a customer service record that ranked it next to last among 25 computer makers, Reeder says. "I used to get a lot of hate mail," he recalls.

Now, a little more than two years after outsourcing its customer service operation to Memphis-based Business Logistics Services, a division of Federal Express Corp., Reeder says Commodore boasts a 99% customer satisfaction record.

"Now I get a lot of letters saying Commodore really knows how to take care of its customers," he says.

Driven by a need to pare costs and focus resources on key business functions, Commodore is typical of the growing number of companies shedding costly functions such as customer support, transportation and inventory management.

Instead, more and more savvy businesses are contracting with a new, fast-growing breed known as third-party logistics providers.

And — surprise — many of the more than 50 new logistics firms are spin-offs of large companies rich in technology assets such as global electronic data interchange (EDI) networks, imaging and bar-coding systems, expert systems and computerized inventory management applications.

"Information is the key element to the logistics challenge," says John Williford, president of Menlo Logistics, a Menlo Park, Calif., subsidiary of Consolidated Freightways, Inc.

During the last few years, dozens of large corporations have spun off for-profit logistics units, including Roadway, Inc., Caterpillar, Inc., TNT Transport Group, Inc., Carolina Freight Corp., Ryder Systems, Inc., Airborne Freight Corp., Associated Air Freight, Inc., Kaiser Aluminum Corp. and CSX Corp.

Regardless of their differing roots and services, the spin-offs share a common interest: leveraging hefty technology assets and logistics know-how into new revenue.

"Without information technology, there would

Continued on page 82

King is a free-lance writer based in Ridley Park, Pa.

Technology into dollars

KEY POINTS

▶New computerized distribution services focus on tracking shipping, storage and delivery operations. Key targets include computer manufacturers, apparel companies and automakers.

▶For IS, spinning off a distribution business often means new, challenging work, including integrating customer and in-house systems.

▶AMR and CSX have unveiled a new OS/2-based worldwide logistics information management system aimed at large Fortune 100 companies. Beta testers include Procter & Gamble and DEC. See story page 83.

▶Companies that have spun off commercial technology units during the last two decades have enjoyed mixed success. See story page 83.

▶FAST FACT: A Northeastern University study estimated that 37% of Fortune 500 companies now employ one or more third-party logistics providers.

QUOTABLE:

"I used to get a lot of hate mail."

Jim Reeder
Commodore Business Machines

How computerized distribution systems work

1 **A look at Consolidated Freightways' system:**

Freight is picked up and delivered to customer.

2 Bills of lading, delivery receipts and attachments are sent to image processing locations, electronically scanned and logged into the system.

3 Electronic images of the documents are then transmitted to main data center in Portland, Ore. They are stored on optical laser discs in an optical storage jukebox.

4 The next day, customers can access documents through a telecommunications link, a phone call to their local facility or image document services department.

5 Customer initiates request for hard copy of document, which is then sent to customer's fax machine within minutes.

Source: Consolidated Freightways, Inc.

CW Chart: Stephanie Faucher

In industry today, there's no doubt: It takes technology to keep track.

Little wonder that many companies are fashioning IS groups into commercial providers of distribution systems and similar services or creating new technology-driven units.

At the heart of today's logistics enterprises are sophisticated EDI networks. These often are coupled with state-of-the-art technology, such as integrated bar-code scanning systems and networked imaging systems that electronically track shipments and inventory.

Also key are software-based decision-support tools for optimizing when, where and how products should be transported, stored and distributed.

These tools, plus nationwide and international networks, let logistics companies offer customers a single source for booking transportation services for themselves and others. These services include tracking cargo shipments across carriers and through interstate commerce checkpoints, handling customer support functions and managing warehousing and inventory operations.

In turn, these third-party systems are linked to clients' financial and business applications. This enables customers to track all business processes — from order entry through product delivery and payment — from a single database record.

Cutting edge

Some logistics systems are on the cutting edge of technology. For example, Menlo Logistics, a Menlo Park, Calif., subsidiary of Consolidated Freightways, uses one of the trucking industry's first networked document imaging systems for tracking freight (see chart above).

Developed over a five-year period, the $10 million system was rolled out last year to handle the mountains of documents that accompany the 75,000 shipments Consolidated Freightways handles each day.

The system is backed by a massive EDI network, over which nearly 30% of Consolidated Freightways' shipping transactions, including bills of lading and invoices, are processed.

Last year, this high percentage of computer-to-computer transactions earned Consolidated Freightways an EDI Association award for electronically linking to more of its trading partners than any other U.S. company.

Now, documents generated at the company's 950 terminals are colllected at 48 regional centers where they are fed into scanning machines, then transmitted to a main data center in Portland, Ore., where they are permanently recorded on optical discs.

The new spin-offs

CONTINUED FROM PAGE 81

be no third-party logistics," declares Stephanie Schafenacker, national account manager for customized logistics at North American Van Lines' High Value Products Division. "Investment in information technology is the cost of entering the logistics business."

Logical next step

Consultants agree that spinning off a logistics subsidiary is a natural for many companies invested heavily in hardware, software and networks to support their primary businesses.

"Information technology is clearly an area where companies look at outsourcing assets," notes Patrick Byrne, a vice president at A. T. Kearney, Inc., a management consulting company in Alexandria, Va.

The idea of parylaying technology into cash is nothing new. Dozens of companies set up computer services and outsourcing businesses in the 1980s. Many found the going tougher than expected, however (see story page 83).

The new wave of would-be service providers is zooming in on the more profitable business of handling distribution. Key targets include computer manufacturers, apparel companies, automobile makers and others looking to trim costs and improve by outsourcing noncore functions. It could be worth the trouble.

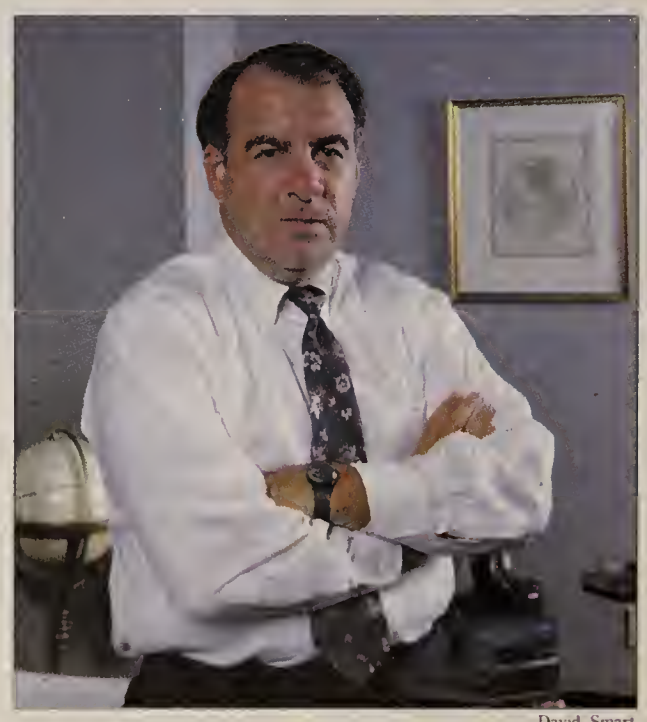
According to some estimates, the third-party logistics market, now about $6 billion a year, could hit $25 billion by the end of the decade.

Business Logistics, for example, now boasts a customer base of 300 companies in 40 different industries. That's enough to account for an estimated 7% of Fedex's $5.4 billion annual revenue.

Menlo Logistics landed a $100 million contract to handle all transportation and distribution operations for Sears, Roebuck and Co.

"Most companies are clearly not interested in making any further information technology investment to handle logistics operations," says Michael Runnager, vice president of business development at Exel Logistics Dedicated Distribution, Inc., a Westerville, Ohio-based subsidiary of NFC International Holdings (U.S.A.), Inc.

"Customers are interested in manufacturing and selling widgets," Runnager continues. "What we do via interfaces to their own systems is keep track of all the details — where the widgets are, their condition, expiration dates and where they are manufactured."



David Smart

Business Logistics' May: *Replacing 'traditional smokestack' approach to logistics*

According to a recent study by Northeastern University Professor Robert Lieb, 37% of Fortune 500 companies now employ one or more third-party logistics providers, primarily to handle warehousing and shipment consolidation.

During the next several years, consultants say, this percentage will climb even higher, as companies in every industry continue to focus in-house resources on revenue-producing activities. In fact, Byrne estimates that some 60% of the $581 billion U.S. companies now spend on logistics-related activities could be outsourced.

Early, sometimes spectacular, success stories are attracting eager information systems shops and service buyers alike.

At Commodore, for example, Reeder says 90% of customers' problems are now resolved in a single call to a toll-free, 24-hour hot line staffed by Business Logistics employees.

There's also a powerful cost incentive, Reeder says: For Commodore to handle the tasks outsourced to Business Logistics would cost twice as much — with far poorer results.

Virtually all third-party providers say their bread and butter is furnishing real-time data that lets customers track shipping, storage and delivery operations through a single database record.

Cutting the strings

The new spin-offs share a curious, mixed relationship with corporate IS. Many tapped the IS talent of parent firms to get started, then built their own IS groups once things got rolling.

Caterpillar Logistics Services, Inc., for example, customized the heavy equipment maker's technology, explains Vice President Steve Wunning, who heads the 30-member staff at the unit, which was formed in 1987.

"We've taken Caterpillar's technology and reprogrammed it to meet our clients' needs," he says. Corporate IS

specialists are called in as needed.

Menlo Logistics has centralized IS at corporate headquarters, according to Williford. This arrangement places 500 IS staffers at his disposal. Some technology — primarily EDI capabilities, imaging and freight tracking — are also imported from Consolidated.

Starting from scratch

In contrast, the 80-person IS staff at Business Logistics built the firm's stand-alone system from the ground up, company President Robert May says. "This is not a case of repackaging existing services," he says. Business Logistics applications are linked to Fedex's transportation systems.

At Consolidated, for example, an internal system was expanded and customized by Consolidated's and Menlo Logistics' IS teams, then opened up to companies in other industries.

Williford says the arrangement lets Menlo Logistics customers access optimization modules and inventory management programs they never had before. He describes the service as "a very sophisticated inventory management system used by multiple customers."

Customers can now tap into Consolidated's full range of support functions, including centralized accounting, warehouse security and IS support.

Something for all

Individual services vary. Some third parties provide retailers and manufacturers with remote read-only access to their private databases to provide the instant data access required by just-in-time and quick-response programs. Others physically locate both hardware and software as well as personnel on a customer's premises.

Tom Zimberoff

Williford's IS team *at Menlo Logistics offers customers access to Consolidated's systems*

Such arrangements create challenging new tasks for providers' internal IS groups. Among the biggest is seamlessly melding customer systems with in-house integrated logistics applications. The end result is that the provider's computer personnel become a sort of "shadow IS department" for the customer.

"In the end, we will look as much like a customer's information technology department as they want us to," Exel's Runnager says.

Even in less radical cases, the simplest projects mean lots of extra work.

For example, the 80-member IS team at Business Logistics had to develop a single, integrated logistics application to replace what May describes as "the traditional smokestack or serial IS approach to logistics."

An expert-based system was created to track customer service calls and warehouse diagnostic data on all Commodore equipment. Customer management gets a daily computerized report of all help desk activities.

Custom software also had to be written to enable the system to combine customer service, order entry, finance, inventory accounting and distribution applications.

Moreover, Business Logistics' IS staff members also provide warehousing and transportation management and customer service support and maintain an integrated logistics database for each customer, so it can download data into its own corporate system.

Finally, a "parts bank" service lets small and midsize companies warehouse spare parts and other inventory, which can be dispatched anywhere in the world on a next-flight-out basis.

But lest you be too impressed, beware: Just because logistics providers have well-known parents doesn't mean they are giants, warns Toby Gooley, managing editor of *Traffic Management Magazine*, a trade journal.

"These companies aren't as big as they would have you believe," warns Gooley, who spotted the "megatrend waiting to happen" two years ago. •

AMR and CSX shake hands on logistics deal

Anyone who doubts that distribution logistics is hot, consider the following: Two of the biggest names in transportation are racing hand in hand into the multibillion dollar industry.

Last month, AMR Corp. and CSX Corp. unveiled a new worldwide logistics information management system that partners hope will be bigger than American Airlines' fabled Sabre reservation system.

Known as Encompass, the new offering is touted as the first integrated, "multimodal" global trading system. The goal, according to John Stow, president of Cary, N.C.-based Encompass, is to give customers "a single window to all trading partners."

Stow says this is accomplished by linking a subscriber company's suppliers, customers and other logistics providers through a single, system-neutral interface.

The two giants joined forces in April, announcing the formation of the joint venture. Each partner reportedly invested "tens of millions of dollars" since 1986 in hopes of cashing in on the booming market. Today the combined staff consists of 99 full-time employees, including 80 information systems professionals.

Company officials say the network-based service is different enough to distinguish itself from competitors. "The basic difference between us and third-party logistics companies is that they are linked to a physical service they are providing," Stow says. "We are into building an information system where different companies can look into data and then make decisions based on that data."

Encompass is a sort of party line, Stow explains, connecting shippers, carriers, freight forwarders and consignees. They can then communicate directly with one another and monitor one another's activities.

During beta testing, for example, Procter & Gamble Co. detected certain routing delays over the Encompass system. So the company was able to redirect inventory from European warehouses rather than tap products stored in safety stock locations in Japan.

Besides Procter & Gamble, other beta testers include Digital Equipment Corp., a major pharmaceuticals firm, three major ocean carriers and three major forwarders.

Encompass has also been working closely with 16 other global shippers, 14 major carriers representing all transportation modes and 12 third parties, including brokers, forwarders and logistics management companies, Stow adds.

Eventually, he says, the Encompass partners envision that freight forwarders and Fortune 500 firms will use Encompass in much the same way that travel agents employ American Airlines' Sabre system.

Encompass uses a combination of off-the-shelf and proprietary software, consisting of a message bus and an applications translation server. The main workstation is an IBM-compatible personal computer using OS/2, operating in either stand-alone or server mode. Pricing varies and includes installation, setup, subscription and transaction fees.

JULIA KING

The old spin-offs

Making money with IS probably prickly but potentially profitable

BY MARK MEHLER

"I once knew a man who took off all his clothes and jumped in a mess of cactus. When I asked him why, he said, 'It seemed to be a good idea at the time.'"

Steve McQueen
The Magnificent Seven

During the last two decades, dozens of companies in every industry had what seemed like a good idea at the time: spin off information systems groups to compete in the commercial market for software and services.

It *did* sound tempting: Low investment, low risk, good business opportunity. TRW, Inc., Kimberly-Clark Corp., The Boeing Co., American Express Co., Black & Decker Corp., Nynex Corp., Martin Marietta Corp. and many others have taken the plunge. Their common dream: leveraging large technology investments into viable commercial businesses.

Look around today, though, and you're likely to see more than a few of those companies pulling cactus needles out of their balance sheets.

"At least two-thirds of the companies that have attempted to turn IS into separate profit centers have failed to achieve their objectives," says Howard Anderson, managing director at Boston-based The Yankee Group. Others say that might be on the low side.

Why no success?

The reasons for hard times and failure are many, according to IS managers and consultants (see chart page 84). Beyond a stagnant economy and huge cuts in defense spending, disappointing performance often boils down to the fact that spin-offs know more about technology than about business.

"Very few people running internal IS divisions think like independent business entrepreneurs," Anderson says. "They've been running sheltered workshops for years. They found out that competing in the outside market looks a lot easier from the inside."

Take Kimberly-Clark, for example. In the 1980s, the paper products maker spun off an outsourcing and consulting operation with a big splash. Earlier this month the company confirmed it has laid off most of its outsourcing/consulting staff and is looking to phase out of the business [CW, Aug. 10].

"They had unrealistic expectations of reaching $100 million in revenue within four years," a source close to the operation said. "And even if they had reached that goal, they would have needed to get much larger to compete against the EDSs and IBMs of the world."

Aerospace/defense contractors, in particular, have also been scaling back

Continued on page 84

The old spin-offs: A mixed bag

CONTINUED FROM PAGE 83

or abandoning outside product and service activities. The following are a few examples:

• **Boeing Computer Services** left the commercial integration market in 1991 after failing to make much of a dent in that highly competitive niche.

Nonfederal business grew less than 2% last year, accounting for only about $78 million of the unit's $1.92 billion in revenue. Boeing Computer still accepts commercial work but is not actively seeking it, according to a company spokesman.

• **McDonnell Douglas Systems Integration Co.** (MDSI) has sold its entire commercial IS operation piece by piece, says William Jackson, director of computer services. The $400 million unit was sold to Electronic Data Systems Corp. for $199 million in November 1991. MDSI, Jackson explains, "felt it needed cash to return to its core aircraft business."

As for the company's Unigraphics computer-aided design (CAD) software, Jackson says that top MDSI management was simply unwilling to make needed investments in the product line.

In the end, analysts say that MDSI, like Kimberly-Clark, simply could not create a large outsourcing base to get the economies of scale needed to compete with EDS or IBM. "Information services were viewed as a distraction," Jackson says.

• **Black & Decker** postponed in May a previously announced public offering of shares for PRC Advanced Systems, citing "current conditions" in the initial public offerings market. Revenue for PRC, Inc., the McLean, Va., IS arm of Black & Decker, was down 1.5%, to $688 million, in 1991.

• **TRW** announced in December that it would trim several arms of its $1.95 billion Information Systems and Services Group, including computer maintenance, real estate processing, and receivables management. Moreover, half of a $365 million fourth-quarter charge was chalked up to technology.

Overall, the company's IS operations lost $138 million in 1991, a far cry from the $49 million profit earned the previous year. Company executives have gone on record saying that computer-related operations could be closed down entirely if no buyers are found by mid-1993.

• **Nynex**'s IS operations suffered a 34% revenue drop last year, plunging from $1.3 billion to $861 million. Ongoing company efforts to focus on core businesses trimmed the company's software, services and distribution businesses.

Last June's sale of 77 Businessland,tfiInc. centers to ComputerLand Corp. was a clear signal that the firm is dumping its low-margin hardware and distribution businesses in favor of software and services, including AGS Computers, Inc. Outsourcing and multimedia are seen as strong (and hopefully profitable) new directions.

Not all bad news

To be sure, there have been some notable successes among the IS spin-offs, observes Scott Pollak, a program manager at G2 Research in Mountain View, Calif.

Andersen Consulting, the $2 billion-plus integrator spun out of Arthur Andersen & Co. as an autonomous operation in 1988.

Lockheed Corp. enjoyed 25% revenue growth in 1991, thanks to rollouts of new graphics, plotters and color printer products from CalComp, its $525 million Anaheim, Calif., computer subsidiary.

Then there is General Electric Information Systems (GEIS), a GE business unit that focuses on electronic data interchange (EDI), mail and related applications.

The unit began 26 years ago as a time-share outgrowth of GE's computer hardware business.

Art Hyder, manager of North American technical services, attributes GEIS staying power in part because it reports directly to GE chairman Jack Welch.

"We are on the same level as NBC or major appliances," Hyder says. "That is the only way to compete. You've got to be serious . . . and you've got to be flexible enough to adapt to the changes in technology and ride out the economic cycles."

James Hazel, marketing manager at Du Pont Information Engineering Associates, a computer-aided software engineering (CASE) vendor in Wilmington, Del., concurs fully.

Du Pont, which began offering commercial products and services five years ago, is only a $20 million business that has yet to achieve sustained profitability.

However, Hazel says parent Du Pont Co. understands that building an integration infrastructure to compete one day with EDS or Andersen Consulting is a long-term task.

"Management understands the nature of start-up businesses," he says. "Quite often, companies have [expectations for IS start-ups] that are too grandiose."

Du Pont offers rapid application development using advanced CASE tools and consults on design methodologies in the Digital Equipment Corp. and IBM worlds. More recently, it has expanded into executive information systems.

Even though the unit does not receive huge sums for marketing from its parent, Hazel says he is not worried. Systems integration is primarily a referral business, he contends. "Customers know Du Pont's overall reputation for quality."

Mixed results

The majority of companies that have spun out information technology as a strategic business report results that fall somewhere between a smashing success and abject failure.

While many companies haven't met initial objectives, they have not given up either.

• **FMC Corp.**, a Dallas-based financial services firm, began selling computer time and network outsourcing services in 1988. Its revenue is roughly half of what the company had hoped for, acknowledges Randall Gannaway, director of information resources, operations and technology.

He attributes the results to a long learning curve. "We are only just beginnning to figure out how to price and market our services," he says.

But FMC, which targets small outsourcing engagements in the Dallas-Fort Worth area, still has hopes that its "home-style" service approach to the commercial market will eventually yield big payoffs.

Rich Frishman

Weyerhauser's Mersereau: *'If [management] had the whole thing to do over, [we] would do it again'*

• **Martin Marietta** is also hanging on. Last year, the Bethesda, Md.-based firm folded its commercial IS business into a Florida-based missles and electronic group. The move seemed to work: In 1991, the unit enjoyed a modest 2% revenue increase, to about $560 million.

Large contracts with the U.S. Postal Service and the Department of Housing and Urban Development, a strong defense presence plus a healthy outsourcing business seem to bode well.

• **Weyerhauser Co.**, a large lumber company, similarly reports mixed results in its commercial IS program.

In spinning out Weyerhauser Information Systems in 1985, the parent company had two aims: diversify its product line and create a management model that would make the systems arm a more effective supplier to internal customers.

Susan Mersereau, formerly vice president of MIS, says Weyerhauser still offers commercial disaster recovery services in partnership with systems vendors. But the firm began backing out of the software business a few years ago.

"There was never a strategy to [achieve] a leadership position in software," explains Mersereau, who has been reassigned as a vice president in the total quality program. "Management underestimated what it takes to sustain such a product line. It never succeeded in becoming a core business here."

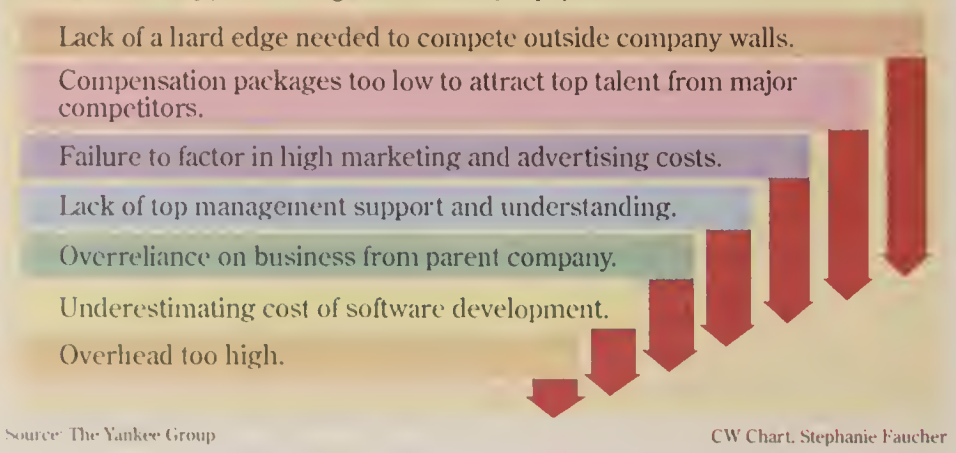
Mersereau adds, however, that while the product diversification strategy may not have worked out, Weyerhauser did achieve its second key goal.

"We've greatly improved our internal customer focus, and now we understand our cost structure," she says. "Our core processes, project and change management, billing and invoicing, had been loose. . . . We streamlined and tightened them up. If [management] had the whole thing to do over, [we] do it again." •

Mehler is a free-lance business and technology writer based in Jackson Heights, N.Y.

Why spin-offs fail

Many promising technology-driven ventures go belly-up because, according to consultants, they fail to recognize these major pitfalls:



Source: The Yankee Group

CW Chart: Stephanie Faucher

Putting estimates on track

Companies are plagued by poor project cost estimating, a recent study found. What follows are some tips on how to do it right.

BY ALBERT L. LEDERER
and JAYESH PRASAD

Cyndy Patrick

There is something very scary going on in companies today: Technology cost estimates are missing their marks. And we're not talking about isolated cases. Our recent study of 115 organizations found that cost estimates for more than three-fourths of the respondents' major projects were off. In 63% of those instances, companies said the projects came in "significantly" over budget.

The big, widely reported gaffes get all the play — like the $8 million estimate at Allstate Life Insurance Co. that turned into a $100 million system or a state of Oklahoma project estimated at half a million dollars and completed at a cost of $4 million. But the fact that more than half the companies we studied had overruns means that disasters, no matter what their size, are happening quietly but consistently.

"People are being fired, and organizations are outsourcing applications development" in response, says Naomi Lee Bloom, managing partner at Bloom and Wallace, a Fairfax, Va., consulting firm. "Top management is fed up with projects that don't deliver as promised."

Skewed cost estimates don't just damage a project leader's career aspirations and lighten company coffers. The ramifications go even deeper.

According to survey respondents, cost estimating is used to figure out staff numbers for projects, to control project implementation, to select and schedule projects and to quote charges to users (see story page 87). If there is some fundamental flaw in a company's cost estimating process, that flaw is going to run through more than just one isolated project — a lot more.

Why is the situation so bad? Because users make changes, people don't communicate, staff relies on early estimates and managers don't monitor what's going on.

The thing everyone wants to know is how to put together and manage a cost estimate. The following guidelines, gathered from what survey respondents said they did right and what they did wrong, might be just the ticket:

Assign the initial estimating task to the final developers. There was a high correlation in the study between companies with cost overruns and the use of different people to estimate and program systems. For these firms, the analyst who prepared the initial cost estimate handed it over to another staffer for development.

The problem here is critical: The developers are working "blind"; they don't know how the estimator arrived at the numbers. There is "a loss of the project's oral history, including how and why initial estimates were crafted," Bloom says.

A more subtle problem with split responsibility is that it may actually *foster* poor estimation and obscure who's at fault. The initial estimator — who doesn't analyze, design or program — has little pressure to be accurate. If there is an overrun, the estimator can claim that the developers were inaccurate.

The more savvy way to handle the situation is to have those analysts and programmers who will develop the system prepare an initial cost estimate during their feasibility study, when they are ascertaining user requirements. There will not be any miscommunication between estimator and developer

Continued on page 86

Lederer is professor of MIS and chair of the Decision and Information Sciences Department at Oakland University in Rochester, Mich. Prasad is assistant professor of MIS at the University of Dayton's School of Business Administration.

Meet the participants

The 115 companies in the Lederer — Prasad survey shake out as follows:

Manufacturing	32%
Insurance	17%
Banking/Finance	10%
Systems consulting	9%
Govenment	6%
Utilities	5%
Retail	5%
Education	4%
Other	12%

Continued from page 85

because they will be one and the same person. Developers, who would be intrinsically involved from estimation to implementation, would be alert to poor user requirement reporting that could result in unreasonably low estimates.

An added bonus is that the process builds commitment. The analysts and programmers who perform the estimates cannot attribute overruns to somebody else's mistake. Allen Bellows, manager of planning yard systems at Bath Iron Works Corp., a shipbuilding company in Bath, Maine, says his estimators were the same people who developed the company's fleet maintenance planning application, which came in within budget and on time at about three man-years. "Developers were more committed because they developed the schedule. Their credibility was at stake," Bellows says.

Delay finalizing the initial estimate until the end of a thorough study. Perception is partly to blame for a poor estimate. The fact is that most projects go through various reestimates to arrive at a final cost figure, but management and users typically remember only the first estimate. They "tend to lock in on the low number," says Martin LaBrecque, information systems vice president of the automotive sector at Allied-Signal, Inc. in Morristown, N.J.

Even though there may be pressure from business management ("I'm routinely asked for estimates with little time to think about them," LaBrecque acknowledges), it is imperative to delay announcing the estimate until it is as accurate as possible.

The first rule is not to blurt out an incomplete guess. The second is to get approval for a feasibility study, which will uncover costs to make the estimate more realistic.

The study should zero in on labor costs needed to analyze, design, code and test. Also, include initial testing costs and the money needed if the test reveals the need for modifications to initial requirements. Don't forget about screens and reports for users, inputs, permanent files and files fed into other systems.

Anticipate and control user changes. The 115 companies in our study rated user changes as "the cause most responsible for inaccurate cost estimates." These changes are sometimes so numerous that a final system may look nothing like the one originally proposed — the one used as the basis for a cost estimate. Sixty-three percent of all projects in the study had to be revised in response to changed requirements.

Such a moving target makes it tough to plan costs, but companies can fight back by anticipating the frequency or extent of potential changes. "Knowing the business functions of the users is the best way of anticipating future requests," says Charlie Buden, project manager at Dayton Power and Light Co., a utility in Ohio.

That entails finding out why users do things and asking how they expect their business environment (their job, the company, the industry, competitors, vendors) to change. Are there new laws in their industry that might change the way they work?

Developers must communicate openly with users, helping them define their business problems and ferreting out any overlooked tasks, such as a screen or report that needs producing. Techniques such as prototyping, use of computer-aided software engineering tools and so on can help here.

Another tactic is to discourage unnecessary user changes that will ultimately invalidate an estimate. At Dayton Power, for instance, changes to a project require executive approval, Buden says. It is important to note, however, that the emphasis is on "unnecessary" changes — those nice-to-haves unrelated to vital areas such as usability or security. It is very important that developers and users together define what constitutes necessary changes beforehand.

Monitor the progress of the proposed project. Seven of every 10 of the large projects in our study had in place a formal monitoring process, such as milestones, so managers could keep estimate and project costs in line. Eight percent of them used an independent auditor to keep tabs on the project's progress. This person could typically come from a separate department such as accounting or auditing or could simply be someone not associated with the development of the project.

"We almost always have a user project

The estimate ills

Our 115 companies reveal the Top 5 insidious diseases that plague their estimating efforts

Changeaholism
Users frequently request changes.

Forgetitis
Overlooked tasks.

Requirements amnesia
Users lack understanding of their requirements.

Miscommunication syndrome
Insufficient user and analyst communication and understanding.

Vague's disease
Poor or imprecise problem definition.

Source: Albert L. Lederer, Jayesh Prasad

How object orientation can help project management

BY ALEXANDER M. STEWART

As development projects become larger and more complex, overruns in both budgets and schedules have become commonplace. It seems that management's reflex response to a project plan is to estimate how much overrun it can tolerate.

One of the problems with most project management plans is that they are developed from scratch. Instead of drawing on a library of historical experience, the project planner has only his experience and a few principles with which to work. Schedules are often based on too much optimism.

This kind of thinking may not have to be the norm forever. Borrowing the object-oriented paradigm from software development and applying it to project management can provide the basis for a more uniform approach to collecting and utilizing historical development experience on a widespread basis.

The first steps

While the object-oriented paradigm is still in its infancy, companies can keep it in mind as a future framework for communicating project experience from one project to another. In the best of all worlds, companies will set up an experience database in the form of an object (experience) library.

Every project consists of four phases: requirements, design, implementation and verification. In object-oriented terms, each of these phases would be represented as "activity objects." Each of these objects can be broken down into more detailed activity objects (tasks) that are conceptually the same as objects in the layer above them (see chart). Instead of looking at phases and tasks as unique, companies can stress the commonality in them.

In large complex projects, this decomposition process continues until the task size is small enough so a task can be performed in a reasonably short time period — say two weeks. Every task, down to the most minute, continues to have requirements, design, implementation and verification activities.

In the experience library, each activity object would be a conglomerate of the results of several development projects employing the same type of activity object. Each activity object would have to be rigorously described; in this way, it becomes easy for developers to search the experience library for objects that can be useful for a current project.

Examples of what might be in a library include a structured analysis task for a subscriber database or an object-oriented design task for an airplane brake control system.

In keeping with the object-oriented paradigm, each activity task (or phase) in a project has a set of external attributes. The attributes, such as cost, schedule and status, are what differentiate one task from another. The value of an external attribute depends on the size and complexity of the task. The relationship between attributes and size/complexity has to be based on experience.

For example, the cost and schedule attributes for a particular activity task are projections based on the experience of similar tasks in previous projects. When the task is complete, what it cost, how long it took to complete and how many problems developers discovered are values added to an experience database.

Reliability issues

To develop a reliable relationship between attributes and size/complexity, a company must collect metrics over a wide range of projects. Defining a uniform set of metrics and formally collecting them are critical components of making the object-oriented paradigm work.

Another possible category of objects in a project are work product objects. A work product is the physical result of an activity — the requirements document you hold in your hand or the software that runs on a computer. It comes into existence at the completion of the verification activity and can be modified later by an appropriate activity, such as a requirements or design task.

Like activity objects, work product objects have a type (unique library descriptions) and external attributes. The external attributes would be title, type (such as document or code), state and version.

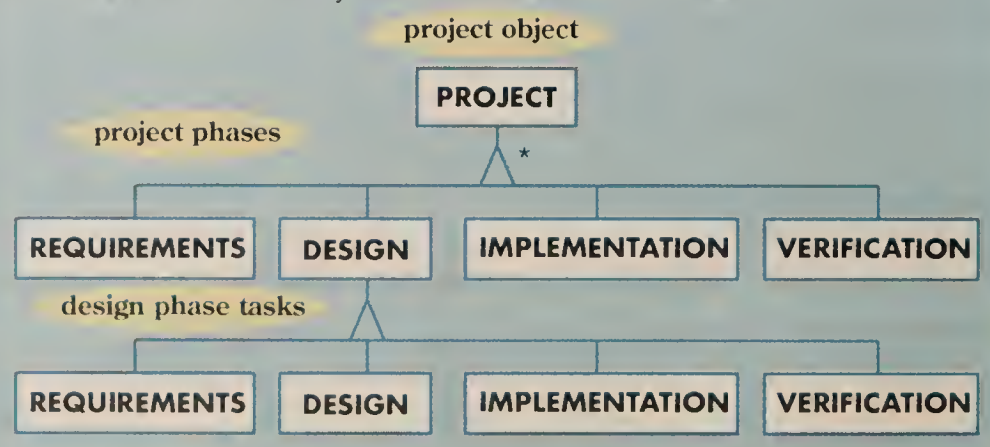
The experience library would contain prototypes of object classes (activity, product, etc.). A project planner could go to the library and select prototypes, using them as a basis for what he develops.

The planner could then spend analysis time only on tasks that involve new methodologies or techniques.

Because the objects he selects are based on experience, not speculation or gutless estimating, his project will have dependable costs and schedules. Products will be of a higher quality as a result of his not skimping on essential parts of the development process, such as requirements analysis and adequate testing. •

Where 'phases' and 'activities' overlap

This diagram shows that there is a continuity of concept from the highest level of abstraction to the lowest level of detail. Phases and tasks are similar.



* The ∧ symbol can be read as "the box at the top of the diagram contains each of the boxes on the row below it." In this case, a project object contains requirements, design, implementation and verification activities.

Source: Alexander Stewart

CW Chart: Janell Genovese

Stewart is a software development consultant at Kintail Associates, Inc. in Los Angeles.

manager who conducts project review meetings assessing schedule and budget, controlling the project's scope and authorizing changes," LaBrecque says.

American Management Systems, Inc. in Arlington, Va., uses three or four independent auditors for each of its projects, says Fred Forman, executive vice president at the company. The input of these auditors during a retail credit system project for hundreds of sites averted what could have been an "unpleasant situation," Forman says. The auditors pinpointed certain problematic parts of the plan, including how long the project would take and how much support it would need, so the estimates for the eight-figure project were more realistic.

Stringent, formal monitoring keeps developers on their toes as they strive to complete the project within the parameters of the estimate. Furthermore, knowing that managers will be following the project's and estimate's every move inspires great diligence and accuracy in the creation of the estimate.

Computing management should carefully study and approve the cost estimate. Even the best estimators make mistakes. That's why IS managers should study and approve the cost estimate rather than relying completely on the skills of estimators. Besides, having the department head involved probably increases the chances of a solid estimate. The study found a statistically significant correlation between the projects in which IS management signs off and more accurate estimating.

"In 1988, Ford implemented a life cycle methodology that incorporates management reviews of estimates to increase their accuracy," says Rich Wojtczack, manager of corporate technical planning at Ford Motor Co.

Rely on documented facts, standards and simple arithmetic formulas rather than guesses, intuition and personal memory. According to our study, there is a high correlation between accurate estimates and the use of documented facts, a simple formula and established standards. (See page 86 for a look at how an object-oriented paradigm and its idea of capturing and reusing experiences can be applied to project management.)

Don't rely solely on cost estimating software. Only 17% of our companies reported using a software package to help estimate the development costs of their large projects. We found that users of such packages were no more accurate in their estimates than were nonusers.

One cynic put the use of an estimating package this way: "First you come up with an estimate that you know management will accept, probably basing it on the amount of money the user has to spend. Then you follow the rules of the package to estimate the actual costs. That means taking a guess at parameters.

"If the software package produces an estimate that is too high, reduce the parameters to lower the estimate to the number you wanted in the first place. If the package produces an estimate that is too low, increase the parameters until you get the estimate you originally wanted. Management will be very impressed by the computer printout from the software-generated estimate, and that by itself may get the project approved. Don't worry about implementing the system within the estimate — let the programmers worry about that." •

Bad estimates' ripple effect

Cost estimating encompasses much more than just how much one large project is going to cost. That's why it is so critical to be accurate.

Here's how it is used to figure out staff numbers for projects, to control project implementation, to select and schedule projects and to quote charges to users.

- **Staffing:** A cost estimate typically includes the expected number of hours needed to complete a project (e.g., 4,500). A company has a standard number of productive hours for employees (e.g., 1,800 hours per year). Management decides when it wants the project finished (say in 6 months, or 900 hours). If you divide the project hours (4,500) by the man-hours to completion (900), you come up with the number of people — five — needed for the period.
- **Control:** In terms of project implementation, most people use hours from the estimate associated with particular, tangible accomplishments (milestones), counting hours until milestones are accomplished. If accomplishments begin to take more hours than planned, you take action (maybe revise the estimate, replace some people on the project team, etc.).
- **Selecting and scheduling:** Management contrasts the estimated number of hours required with the number of hours individual analysts and programmers have available so it can assign projects to available people.
- **Quoting charges:** The estimate is a dollar cost figure that information systems management might directly charge to users.

What difference does IT make?

Think about it. Information Technology. IT's making a critical difference in the industries deemed crucial to the nation's prosperity by the U.S. Council on Competitiveness—nine industries together worth over $1 trillion and employing some 12 million people. Industries as diverse as aerospace, chemicals and construction. IT is software and information processing. Systems integration and network communications. Supercomputing and desktop publishing. And much more.

IT's the industry that last year included five of the six fastest growing segments of the U.S. economy, with a growth rate in excess of 13 percent.

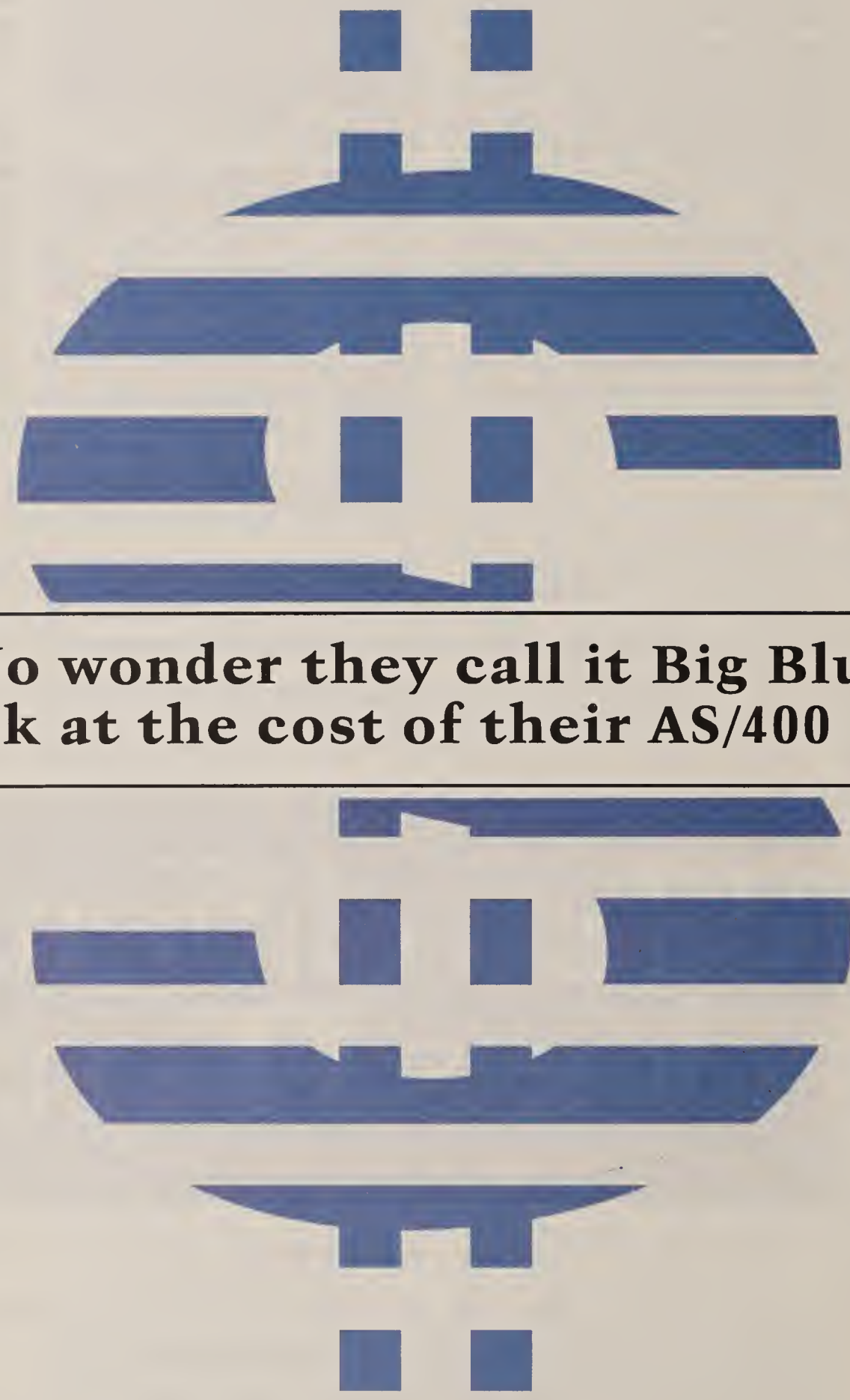
And Information Technology brings it all to bear for a better bottom line. By an express delivery company using IT to streamline package routing. By an aerospace company using IT to model a next generation airliner and avoid a full-scale mock-up. By a baking company using IT to cook up millions of dollars in sales force productivity gains.

The bottom line: Information Technology can mean the difference between running a business, and being run out of business. When you think about it, IT makes a major difference. To learn more, call ITAA at (703) 284-5326.

Information Technology. What you need to succeed.

ITAA

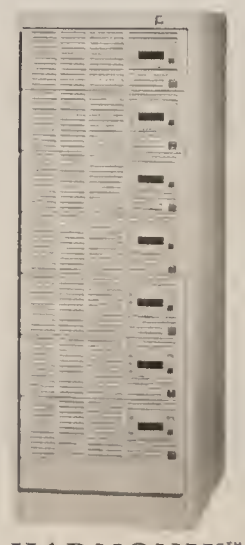
Information Technology Association of America



No wonder they call it Big Blue.
Just look at the cost of their AS/400 upgrade.

Inevitably, IBM says the only way to get increased AS/400 performance is to upgrade your CPU. And every time you upgrade, it means you're looking at new hardware, new software, additional memory, additional disk space, and greater service costs on an annual basis. (Ouch.)

Good for IBM. Not so good for you. Especially when EMC's Harmonix™ Series of Integrated Cached Disk Arrays (ICDA™) offers increased system level performance at a lower total system cost.



HARMONIX™
ICDA SERIES

Many AS/400 users have found that by adding faster DASD, they're able to increase their I/O performance and postpone a costly CPU upgrade. And many have chosen EMC's Harmonix as the alternative to a system upgrade.

By storing critical data in high performance cache, Harmonix is able to access your most frequently used information at electronic speeds and bridge the I/O performance gap between fast processors and slower storage devices. An attractive solution, indeed.

To see how others have benefitted from Harmonix and learn more about upgrading your overall system performance, call 1-800-424-EMC2, extension M274. And save some big green by not buying Big Blue.

EMC²
THE STORAGE ARCHITECTS

IBM & AS/400 are trademarks of International Business Machines Corporation. EMC, Harmonix, ICDA, and MOSAIC 2000 are trademarks of EMC Corporation

YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of $29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name

Title Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $74.97, Central/South America $130, Europe $195, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

E4234-2

YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of $29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name

Title Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $74.97, Central/South America $130, Europe $195, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

E4234-2

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

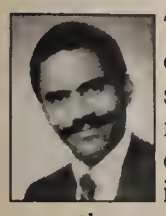
BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144

EXECUTIVE TRACK



The Associated Group, an insurance and financial services company based in Indianapolis, recently named **Michael L. Wright** its senior vice president and chief information officer.

Before joining Associated four years ago, Wright served as executive vice president and chief operating officer of Baltimore-based American Health and Life Insurance Co. Prior to taking on his current CIO post, he was president and chief operating officer of Anthem Life Insurance Cos., an Associated subsidiary group.

.....

Thirty-eight year **Sears, Roebuck and Co.** veteran **Charles A. Carlson**, president of **Sears Technology Services, Inc. (STS)**, will retire within the next several months, as soon as the transition of STS to the newly formed Sears/**IBM** network outsourcing joint venture **Advantis** has been successfully accomplished.

The advent of Advantis was announced last week; the company is expected to be up and running by the end of the year, according to its founders. Carlson, who has served as president of STS since its founding in early 1990, is credited with helping to spearhead the new joint venture.

.....

The Washington, D.C.-based **Urban & Regional Information Systems Association (URISA)** recently elected **Laurel McKay** as its new president and announced three new board members: **Nora Sherwood Bryan**, **Peter Crosswell** and **Anne Hale**.

McKay is currently director of the development of Alberta, Canada's Land-Related Information System. Sherwood Bryan is information technology group manager at **Ernst & Young**. Crosswell, a consultant, now chairs the URISA Standards Committee, and Hale serves as director of geographic information systems and technology development at the **South Carolina Water Resources Commission**.

Security that's certifiably good

Seeking to lift profile of security pros, groups push to provide certification procedure

BY JAMES DALY
CW STAFF

What do the following people have in common: systems software specialist, internal auditor, chief of data management, head of software development, chief of communications management, network administrator and systems analyst?

Answer: They are all in charge of computer security.

Surprised? Don't be. The jumble of titles highlights the fact that data security is often considered an afterthought at many organizations — a responsibility tacked onto other responsibilities.

Not an afterthought

That is a dangerous attitude, says Richard Koenig, an independent security consultant who now heads the International Information Systems Security Certification Consortium, Inc. (ISC^2), a nonprofit group pushing to provide the first specialized professional certification in the "infosecurity" field.

"Computer security is a very specialized art, but at many places it's treated as an afterthought," says Koenig, president of the Spencer, Mass.-based group. Adds Philip Chapnick, director of the Computer Security Institute in San Francisco: "A lot of people stumble into information security with no training. The company gets dinged on an audit and they quickly assign someone to do security."

ISC^2 was founded in 1989 by representatives of several professional organizations in conjunction with companies looking to easily identify individuals well-qualified for the task of resolving current and future information security issues.

"We need to quickly find people who we know can do the job, who know what they are talking about and can handle themselves well," says Hal Tipton, director of computer security at Rockwell International Corp. in Seal Beach, Calif., and vice president of ISC^2.

Koenig says ISC^2 is in the final stages of creating an examination for its Certified Information Systems Security Professional designation and hopes to hold the first tests next spring. The group will also hold training classes to prepare hopeful candidates for the test.

To get the certification program started quickly as well as to underwrite test development, ISC^2 directors set up an initial process whereby applicants can submit evidence of professional experience and qualifications to a review committee. Such qualifications include eight years in the data security field, with at least one year apiece in four of the 17 areas in which ISC^2 hopes to offer specializations: physical security, access control and cryptography, to name a few.

Under this "waiver of formal examination" process, approved applicants will be certified without having to take the exam, Koenig says. They will, however, need to pay the $250 test fee.

After the initial cycle, Koenig says, he hopes his group will certify more than 1,000 people a year.

Koenig says the certification process is intended to be "a starting point," not a Superman designation.

Let's get quizzical

ISC^2 security certificate hopefuls confront questions such as the following:

1. Who does David Kahn credit as the father of Western cryptology?

a. Genghis Kahn.
b. Kautilya.
c. Daniel.
d. Gorgo.
e. Leon Battista Alberti.
f. Reverend Blake Greenlee.

2. The strength of a cryptographic key is usually described by:

a. Multiplying the key length by frequency of change.
b. Dividing the number of possible keys by two.
c. Summing the key space.
d. Calculating the third harmonic of the key shift.
e. Calculating the coefficient of stochastic variance.
f. Subtracting the weak keys from the total key space.

3. Which of the following weakens the effectiveness of a password?

a. Increasing the number of password attempts.
b. Increasing the length of a password.
c. Increasing the size of the permissible character set.
d. Encrypting the password for transmission.
e. Encrypting the password for storage.
f. Masking the password or using a nondisplay field.

Answers: 1. e; 2. b; 3. a

Source: ISC^2 Group — CW Chart: Michael Siggins

"It's not perfect," he says. "The certificate will be a measure of knowledge vs. the ability to apply it." Continuing education is built into the plan, he adds: Certified professionals will have to be recertified approximately every three years by taking a test dealing with new developments in the field.

Testing 1-2-3

The ISC^2 certification examination will consist of two parts: a core main review that evaluates an applicant's understanding of general information security practices and principles, and a number of specialty tests that will provide in-depth evaluation of specific areas of security.

What are the benefits of certifications? Koenig named several:

- The specialty tests will be able to identify applicants who have specific expertise, allowing organizations to streamline the process of job assignment and quickly assemble a security staff finely tuned to protect information in their specific environment, he said.
- Companies required to demonstrate a certain level of security proficiency in order to meet legislative or regulatory requirements will be able to certify that they have personnel who meet the criteria dictated.
- Additionally, "the qualifications of applicants can be assessed based on their achieving professional certification, rather than their ability to write a convincing resume," Koenig said.

Solid measure?

Good intentions notwithstanding, some users remain skeptical of the need for a certificate. "I know a lot of people who can't take a test worth a darn, but [who] are the best folks to have in the trenches when you're fighting a security problem," says Dennis Evans, a systems analyst in charge of network security at the Illinois Department of Revenue in Springfield.

Others say the certification process may provide a good foundation but warn against using it as a crutch.

"There is no substitute for real-world experience," says David Stang, chairman of the International Computer Security Association in Washington, D.C. "Continuing education needs to be heavily emphasized. I would hate to see us end up with a bunch of narrow specialists within the computer security discipline."

ISC^2 is not the only group to come up with the idea of standardizing data security training. Similar certifications are already offered by two other groups, although neither offers the degree of concentration on data security that ISC^2 promises.

The Institute for Certification of Computer Professionals in Des Plaines, Ill., does not focus directly on the information security function but does offer a subspecialization in its Certified Computer Programmer, Certified Data Processor and Certified Systems Professional designations.

Other organizations are also moving to provide a base of common knowledge to train future security professionals. The Computer Information Systems faculty at the University of Idaho, for instance, has developed an eight-step sample curriculum for teaching information security to students.

Bank CIOs defend their systems strategies

BY THOMAS HOFFMAN
CW STAFF

Information systems executives at a few major U.S. banks have taken exception to the findings of a recent report that shows the banking industry still mired in the technological stone age despite huge dollar investments in information technology.

The 1992 survey of technology was issued by New York-based market research firm Ernst & Young in conjunction with trade newspaper *American Banker* and was based on responses from chief technology executives at 68 of the nation's 300 largest banks. It drew a bleak picture of banks slogging through an outdated, mainframe-heavy technology landscape, $14.1 billion worth of 1991 technology investment notwithstanding.

What we are seeing is the commercial legacy of the banks' technology legacy, Ernst & Young banking partner Diogo Teixeira said. Most, if not all, of the survey respondents continue to use outdated legacy mainframe systems to run more than 80% of their applications, he said, with a resulting drain on profitability.

But IS executives at several banks characterized their institutions as heirs, rather than victims, of legacy systems.

David A. Moore, senior vice president of information processing at Mellon Bank Corp. in Pittsburgh, said he believes alternate computing platforms, such as client/server-based or distributed computing environments, have not yet matured to the level required to process corporate-strength applications.

For example, Moore pointed out, major banks typically process between 4 million and 8 million checks per day. Only a mainframe, he said, can satisfy such number-crunching demand.

"The capabilities for high-volume transaction processing, reliability, security and connectivity needs for commercial banks can only be met with large mainframes," said Anish Mathai, vice president of technology strategic planning at Bankers Trust Co. in New York.

Ernst & Young's research shows that only a handful of banks have deployed leading-edge technologies such as check image processing and expert systems, Teixeira noted. On a scale of 100, the highest score the survey logged for any respondent bank in terms of technological advancement was 39. Teixeira declined to disclose the high scorer, but he said that many banks had scores close to zero.

Moore disputed the significance of such findings. "Check image processing has not evolved to the point where any bank has utilized it fully," he said. Mellon has been using FileNet Corp.'s file folder imaging system for nine years with good results, Moore said. The bank has also been testing IBM's check imaging systems for the past three years.

Many banks are in fact using leading-edge technologies to support their data centers, according to Teixeira. For example, he said, quite a few have been aggressive in updating their direct-access storage device technologies. Some use sophisticated on-line networks to support their telecommunications requirements, he added.

But these are the exceptions, Teixeira said. The rule remains technological catch-up at the banks. For example, few banks reported wide use of groupware, or software that is used to coordinate activities among multiple group members. The Chase Manhattan Bank NA in New York has been an early proponent of Lotus Development Corp.'s Notes groupware, but Teixeira said the $97 billion bank is an exception among its competitors. Only 6% of the banks surveyed are widely using groupware, he said.

Teixeira: *Few banks use E-mail regularly*

Waiting for advances

Mathai said that although he expects the use of groupware "to explode" throughout the banking industry over the next few years, he believes most banks are waiting for the technology to ripen.

Although the industry is using 766,000 microcomputers — a 19% increase from 644,000 last year — only 37% of the banks' locations have local-area networks, Teixeira said. The number of distributed computing systems is expected to grow from only 4% of the installed base today to 11% in 1995.

Barnett Banks, Inc., the nation's 18th largest bank in terms of assets, is moving aggressively to migrate many of its mainframe-based applications onto client/server environments, according to Jonathan Palmer, chief information officer at the Jacksonville, Fla.-based bank. Palmer said Barnett has roughly 700 LANs throughout its operations, most of them based on Token Ring or Ethernet.

But at the same time, the bank is also migrating many of its mainframe applications from one box to another where they are most cost-effective, said Palmer, who is also chairman and chief executive officer of Barnett's information technology subsidiary Barnett Technologies, Inc.

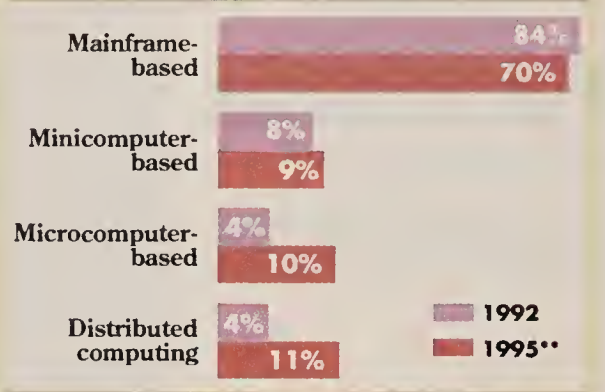
"We need the storage, the data transfer and the processing power that the mainframe brings to bear," Palmer said.

Surprisingly, electronic-mail applications are being widely used by a mere 23% of the banking industry, according to the survey. Although the technology has been available for more than a decade, Teixeira said, "only a fraction of the banks are using it regularly." Both Moore and Mathai said their organizations were among that fraction. Palmer agreed that E-mail can be used more effectively. However, he added, banks do not deserve to be singled out. "E-mail is a tool that's certainly not being used to its fullest capabilities by any industry," he said.

Moving away from the mainframe

The mainframe will still be used more than any other platform, but it is also the only platform to regress

Computer choices as a percentage of industry applications*



Total computing power in MIPS*

	Mainframes		Microcomputers	
	Avoiloble	Utilized	Availoble	Utilized
1990	38,000	28,500	650,000	32,500
1993**	62,000	46,500	1,600,000	80,000
2000**	200,000	150,000	72,000,000	3,600,000

*Based on a survey of 68 bank holding companies
**Projected

Source: Ernst & Young/*American Banker* CW Chart: Michael Siggins

CALENDAR

SEPT. 6-12

Rocky Mountoin Computer Conference ond Exposition. Denver, Sept. 8-10 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

SEPT. 13-19

Softwore Development Conference ond Seminor '92. Boston, Sept. 13-18 — Contact: Miller Freeman Publication, San Francisco, Calif. (415) 905-2741.

Buscon '92/East. Boston, Sept. 15-17 — Contact: Buscon '92, Norwalk, Conn. (203) 852-0500.

DOD-STD Conference. Washington, D.C., Sept. 15-17 — Contact: David Maibor Associates, Inc., Needham, Mass. (617) 449-6554.

Crystal Boll '92. San Diego, Sept. 17-19 — Contact: Acucobol, San Diego, Calif. (619) 689-7220.

DevCon '92. Phoenix, Sept. 18-23 — Contact: Microsoft Fox, Inc., Perrysburg, Ohio. (800) 927-6368.

SEPT. 20-26

Sopphire '92. Orlando, Fla., Sept. 20-23 — Contact: Sylvia Bauer, SAP Canada, North York, Ontario. (416) 229-0574.

Pen-Based Expo. Los Angeles, Sept. 21-23 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Imoge World. New York, Sept. 21-25 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, New York (914) 328-9157.

Virtuol Reolity '92. Westport, Conn., Sept. 23-25 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

The Fifth Annual New Englond Computer Operotions Conference. South Portland, Maine, Sept. 24-25 — Contact: Jerome Lemelin, Portsmouth Naval Shipyard, Portsmouth, N.H. (207) 438-2815.

SEPT. 27-OCT. 3

Sensors Expo's Seventh Conference. Chicago, Sept. 29-Oct. 1 — Contact: Expocon Management Associates, Inc., Trumbull, Conn. (203) 374-1411.

The Sixth Annual Strotegic Issues Conference ond Client Forum. La Jolla, Calif., Sept. 29 — Contact: Computer Intelligence, Santa Clara, Calif. (408) 980-4300.

CASE World Conference & Exhibition. Boston, Sept. 30-Oct. 2 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

CD-ROM Expo '92. Boston, Sept. 30-Oct. 2 — Contact: Mitch Hall Associates, Dedham, Mass. (617) 361-2001.

Softwore Publishers Associotion (SPA) Annuol Conference. Washington, D.C., Sept. 30-Oct. 3 — Contact: SPA, Washington, D.C. (202) 452-1600.

Groph Expo Eost '92. New York, Oct. 3-6 — Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

OCT. 4-10

The New Tools for Design ond Design Production Conference. New York, Oct. 4-6 — Contact: The Center for Computer Graphics for Design, Santa Fe, N.M. (505) 986-0523.

Repository Ad/Cycle Internotional Users Group Conference. Chicago, Oct. 4-7 — Contact: Repository Ad/Cycle Group, Santa Monica, Calif. (310) 394-8305.

Electronic Doto Interchonge Associotion (EDIA) Annuol Conference. Nashville, Oct. 5-8 — Contact: Gregory Harter or William Myers, EDIA, Alexandria, Va. (703) 838-8042.

Scon-Tech '92. Anaheim, Calif., Oct. 5-8 — Contact: AIM USA, Pittsburgh, Pa. (412) 963-8588.

OCT. 11-17

Networld '92. Dallas, Oct. 13-15 — Contact: Kathy Ryan, Networld, Fort Lee, N.J. (201) 346-1400.

OCT. 18-24

Info/Tech Monogement '92. Nashville, Oct. 18-21 — Contact: Data Processing Management Association, Park Ridge, Ill. (708) 825-8124.

Riscon '92 Conference ond Exhibition. New Orleans, Oct. 18-21 — Contact: National Retail Federation Division, New York, N.Y. (212) 244-8780.

Society of Informotion Monogement (SIM) 1992 Annuol Conference. Universal City, Calif., Oct. 18-21 — Contact: SIM headquarters, Chicago, Ill. (800) 477-4561.

APICS Conference ond Exhibition. Montreal, Oct. 18-23 — Contact: The Educational Society for Resource Management, Falls Church, Va. (703) 237-8344.

OCT. 25-31

The 13th Annual Treosury Monogement Conference. San Diego, Oct. 25-28 — Contact: Treasury Management Association, Baltimore, Md. (301) 907-2862.

ASIS Annuol Meeting. Pittsburgh, Oct. 26-29 — Contact: Richard B. Hill, ASIS, Silver Spring, Md. (301) 495-0900.

Totol Quolity Monogement (TQM) '92 Conference ond Exhibits. Chicago, Oct. 27-28 — Contact: Pat Jones, Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500.

Outsourcing the Help Desk Conference. Colorado Springs, Oct. 27-30 — Contact: Help Desk Institute, Colorado Springs, Colo. (719) 531-5138.

Educom '92. Baltimore, Oct. 28-31 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Expo Comm Chino. Beijing, China, Oct. 30-Nov. 4 — Contact: Wendy Pang, E. J. Krause Associates, Hong Kong. (011) 5-773-343.

NOV. 8-14

Unlted Stotes Society of Wong Users (USSWU). Boston, Nov. 9-13 — Contact: USSWU, Chicago, Ill. (708) 652-3888.

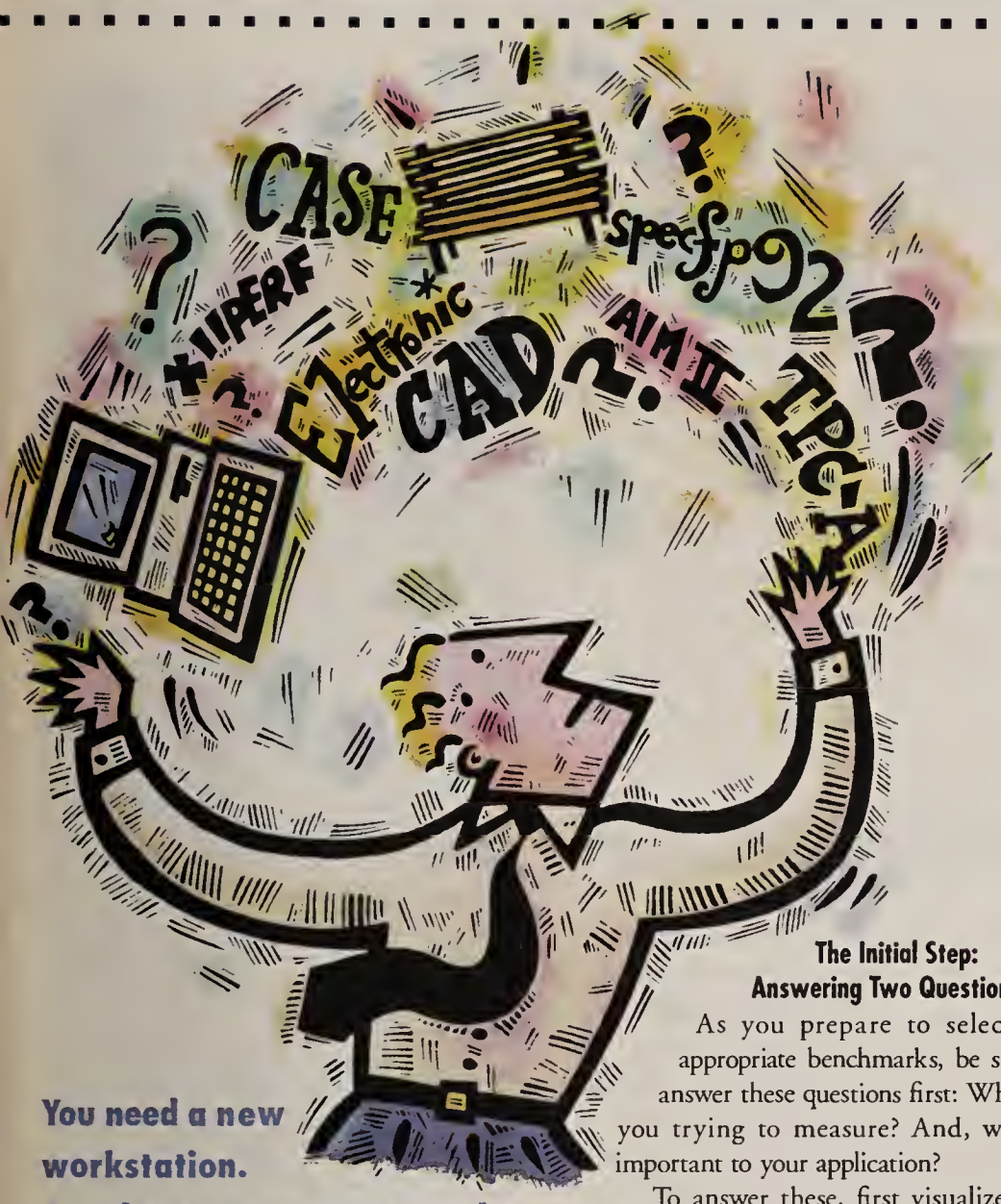
12th Annuol Eostern Americon NCR/AT&T Computer Users Conference. Lake Harmony, Pa., Nov. 12-13 — Contact: Frank Whalon, Tinius Olsen Testing Machine Co. (215) 675-7104, Ext. 216.

Synergy '92. Anaheim, Calif. Nov. 9-13 — Contact: Weingarten Publications, Inc., Boston, Mass. (617) 542-0146

digital

DIGITAL UPDATE
THE OPEN ADVANTAGE

AUGUST 1992



Before You Get Benchmarks, GET ANSWERS

You need a new workstation. But there are so many on the market. How do you decide?

Ask the right questions. Then, choose the right benchmarks.

You're planning to purchase a new workstation and you need some vital information to help you make the right choice. You need to find out whether System X can handle your particular application well enough to satisfy your business requirements and whether it's a better value than System Y. Ideally, this information would come from a direct comparison of the competing systems running your application under exactly the same conditions — a situation that's costly and not very likely to occur.

When you can't do side-by-side comparisons of actual applications, the next best information provider is the benchmark. Benchmarks measure everything from CPU to memory to I/O subsystems, and more. That's why it's up to you to choose the particular benchmarks that relate directly to your system's applications. Choosing the wrong benchmarks can be a waste of time and money. In the end, you may be misled into selecting a system that cannot do the job according to your requirements.

The Initial Step: Answering Two Questions

As you prepare to select the appropriate benchmarks, be sure to answer these questions first: What are you trying to measure? And, what is important to your application?

To answer these, first visualize your application on a generic system in your environment. This generic system consists of eight basic components, including:

- Central processor
- Floating point processor
- I/O subsystems
- Memory
- Integer and logical ALU (Arithmetic Logical Unit)
- Network interface
- Operating system (utilities, compilers, databases)
- Graphics (for workstations).

Overall performance is determined by the interaction of these components with your application. Therefore, in determining what's important to measure, weigh these components according to your application's use of or dependency on each. The next step is to identify the benchmarks that measure the components most utilized by your application.

Major Benchmarks: What They Measure

Of the major industry-standard benchmarks, the following are likely to be your best sources of information prior to a system purchase. Most vendors will provide you with specific results of these on their own platforms.

SPECint92 and SPECfp92 (Standard Performance Evaluation Corporation)
Having replaced the original SPECmark, these measure processor speed, memory bandwidth, and compiler effectiveness. SPECint92 is a set of 6 Integer C programs. SPECfp92 is a set of 9 dp floating point FORTRAN, 3 sp floating point FORTRAN, and 2 sp C programs.

AIM II
This benchmark measures integer and floating point, I/O transfers, OS function and system calls, disk access, and data transfer over a UNIX pipe.

AIM III
Measuring CPU, floating point, I/O, memory, integer, and some system functions, AIM III can be used to compare relative performance of multiuser UNIX systems and can be customized for capacity planning. (Metric: AIM Performance Rating, Maximum User Loads)

AIM Milestone
AIM Milestone is functionally representative of real user loads in a multiuser environment. It measures system utilities speed and capacity for UNIX systems. (Metric: Utilities Index)

SPEC SDM
Measuring CPU, memory, compiler effectiveness, and I/O subsystems, SPEC SDM is representative of a UNIX software development multitasking environment. It also has a multistream metric for multiple processor systems. (Metric: Peak Throughput at scripts/hour)

TPC-A
This benchmark measures CPU, memory, I/O subsystems, terminal handling, and database performance. TPC-A is an online transaction processing benchmark and is database dependent. Some vendors use client/server or front-end/back-end configurations. (Metric: TPX-A and $K/TPS-A)

TPC-B
Measuring CPU, memory, and I/O subsystem and database performance, TPC-B should be used to compare relative performance of database managers. It does not, however, contain representative user interaction via terminal handling or think time. (Metric: TPS-B and $K/TPS-B)

Dhrystone
Dhrystone measures integer processor and C, Ada, or Turbo Pascal compiler efficiency. (Metric: Integer MIPS)

Whetstone
Whetstone measures single- and double-precision integer processor and FORTRAN compiler efficiency. (Metric: KWIPS or WIPS)

Linpack
This benchmark measures single- and double-precision floating point using FORTRAN mathematical and scientific applications. (Metric: Sp MFLOPS, db MFLOPS)

CPU2
CPU2 measures CPU, memory, integer, and single-precision floating point. This benchmark is FORTRAN and fp intensive. (Metric: MVUPS)

X11PERF and GPC/PLB (for workstation graphics)
X11PERF tests aspects of X server performance from simple 2D vectors to complex 3D polygons. GPC/PLB is a set of picture-level benchmarks designed to measure relative performance of CRT-based displays.

NHfsstone
Measuring NFS server performance, NHfsstone is one of the very few network environment benchmarks in existence. It measures average response time for NFS transfers as the load on the server is increased.

Free Offer from AIM Technology

Take advantage of AIM Technology's Summer 1992 offer, and get critical benchmark data on the latest computing technology from Digital, IBM, Sun, Hewlett-Packard, NCR, and others. AIM — an independent third-party certifier of vendor performance — is offering a FREE issue of its Summer 1992 UNIX System Price/Performance Guide with your purchase of a one-year subscription ($29.95). That's five quarterly issues for the price of four. **For information, call Amy Yowell at 800-848-8649, (or 408-748-8649 inside California).**

Benchmarks continued ▶

digital™

Benchmarks continued

Which Benchmarks Are Right for Your Applications?

Application	Components	Benchmarks
CASE Applications	Integer performance, 2D graphics, Disk I/O, Interactivity	SPEC SDM, SPECint92, AIM, Milestone, AIM III, Dhrystone
Electronic CAD	Integer and floating point math, Cache, 2D graphics, Disk I/O	Linpack, X11PERF, SPECint92, SPECfp92, Whetstone
Mechanical CAD	Floating point, 3D graphics, Memory, Disk I/O	SPECfp92, X11PERF, GPC/PLB, Linpack, CPU2, Whetstone
Database Applications	I/O, Database performance	TPC-A, TPC-B, AIM
Multipurpose Servers	Multitasking, Multiuser, I/O, CPU, Memory, Network interface	AIM III, SPEC SDM, NHfsstone
Scientific Applications	CPU, Floating point, Integer	SPECint92, SPECfp92, Dhrystone, Whetstone, Linpack, CPU2

To find out, establish which components are used in your application. Then, choose the benchmark that measures that component. Use this chart — listing specific applications, their components, and appropriate benchmarks — to help you decide.

Is There A VAX System or Upgrade in your FUTURE?

If you're in the market for a new VAX 4000, 6000, 7000, or 10000 system or upgrade, you can take advantage of 15 percent cost reductions on selected software and software license upgrades from industry-leading software suppliers, including:

- Andersen Consulting
- ASK Computer Systems
- Cognos Corporation
- Dun and Bradstreet Software
- EEC Systems, Inc.
- Ingres
- Lotus Development Corporation
- Oracle Corporation
- Progress Software
- Ross Systems, Inc.
- SoftwareAG
- Speakeasy Computing
- WordPerfect, Inc.

In short, a VAX system or upgrade purchase will guarantee you savings on more than 30 of the most popular business applications on the market today.

As CCC Found Out: VAX Systems Have the Future (and the Savings) Built Right In

Providing user access to a repertoire of more than 1.5 million titles, Copyright Clearance Center (CCC) of Salem, Massachusetts, found the solution to its growing business needs through the implementation of a VAX 6000 Model 610 system upgrade. Also, the company continues to use ORACLE as its relational database technology by taking advantage of last year's limited-time savings on software license upgrades.

FOLLOW IT UP WITH SOFTWARE SAVINGS.

Initially, CCC implemented Digital's VAX 6000 Model 310 because of the system's powerful CPU, increased memory and storage capacity, and high-speed networking capabilities. ORACLE was selected for its tight synergy with the VAX environment, in addition to its leading technology and third-party applications. What's more, ORACLE was able to provide CCC with SQL*Forms, RDBMS, and 4GL tools to generate applications quickly and to ensure flexibility in meeting business objectives.

With the Digital/ORACLE team, CCC was able to store its rights-holder and title information and process the considerable data and transactions necessary for photocopy permission. Plus, the company was able to respond quickly to customer requests and to adapt the system to accommodate future business challenges.

New Programs, New Business, New System Challenges

As CCC business increased, so did the demands on its VAX system. Additional computing power was needed to keep pace with projected growth. To that end, CCC teamed with one of Digital's largest distributors to formulate an upgrade plan that would protect CCC's current investments.

Boosting the current version of VMS running on the VAX 6000 Model 310 to VMS version 5.5 set the stage for an upgrade to the VAX 6000 Model 610. After only a two-hour conversion process, CCC gained ten times the computing power — without any disruption to its users. In addition, the upgrade allowed CCC to add 15 terminals, a new controller, increased I/O capabilities, and additional memory to accelerate the process and to cut database queries to sub-second response times.

With the purchase of this system upgrade, CCC acquired an ORACLE software license upgrade at a 15 percent savings.

Today, CCC continues to team its VAX system with ORACLE software to provide faster and better communications to publishers and customers.

For more information on VAX systems or software savings, call 800-DIGITAL (800-344-4825), press 2, and request ext. 24V.

Make the Electronic Connection

What's new in computing? Find out by using the Electronic Connection, Digital's online information and ordering service — all you need is a VT-compatible terminal or PC and a 1200/9600-baud modem. Simply dial 800-234-1998 between 7 A.M. and midnight EST, 365 days a year, for access to:

- The latest Digital news
- New product announcements
- Product descriptions and specifications
- Configuration tools
- Up-to-date pricing
- Software demos
- Training course descriptions
- Scheduling/shipping status.

What's more, you can use the Electronic Connection to work up price quotes, or place orders directly with an approved credit agreement, reducing paperwork and turnaround time. All quotes come with 60-day price protection, and all Digital Business Agreement and GSA discounts apply. Plus, FASTship service — next-business-day shipping — is available for many Digital products.

The best part? You get it all at no charge. The Electronic Connection service is free — with no obligation to buy.

For more information or for assistance in accessing the Electronic Connection, call 800-DIGITAL (800-344-4825) and press 1.

Need It in a Hurry? Use Digital's FASTship.

Get what you need fast with Digital's FASTship service. With FASTship, your order is shipped the next business day — or sooner. What's more, we offer FASTship on 2,400 of our most popular products, including printers, video terminals, disk and tape options, networking products, and more.

Just look for the yellow FASTship highlight next to the product in your *DECdirect* catalog. Then specify FASTship service when you call or fax in an order — at no extra charge. What's more, all discounts and Trade-Up Values apply.

DECdirect accepts both credit card and invoice orders. To place an order, choose one of these options:

- Call 800-DIGITAL (800-344-4825).
- Utilize DECdirect's toll-free fax line at 800-234-2298.
- Access Digital's online Electronic Connection by dialing 800-234-1998 at 1200 to 9600 baud, from any Digital-compatible terminal or PC.

For more information on Digital's FASTship service, or to receive a copy of the latest *DECdirect* catalog, call 800-DIGITAL (800-344-4825), press 2, and request ext. 62X.

GETTING THE FACTS ON *Alpha Services*

YOU'VE HEARD THE STATEMENTS about Digital's high-performance Alpha technology:

Digital is paving the way to twenty-first century computing ... Today's VAX systems are Alpha-ready ... Your initial investment will always be protected.

Sounds good. But, you still have questions. You want more information — about Alpha itself, the migration process, and the service offerings that will be key in paving a flexible and cost-effective pathway to better computing solutions for the future. Here, Peter Jansen, Digital Services Alpha Program Manager, answers some of your most commonly asked questions regarding Alpha, and its ability to see your business through to the twenty-first century and beyond.

Q. Why should I change or move to Alpha?

A. Alpha represents the technology platform that will take today's computing environment well into the twenty-first century. With Alpha, the performance, productivity, and efficiency that you already have with VAX and DECsystem platforms is significantly enhanced. For example, Alpha extends your ability to:

- Access large decentralized and distributed databases, using object-oriented technologies
- Integrate knowledge-based systems and rules
- Integrate voice, data, and images
- Handle volumes of data movement.

In addition, the "openness" of Alpha technology will provide you with flexibility, long-term investment protection, and operational performance improvements. Digital will initially offer OSF, NT, and OpenVMS Alpha systems. OSF and OpenVMS will have the same open features available on today's VAX and DECsystem platforms.

Digital Services can support you in the process of reengineering your overall business, downsizing to a distributed client/server environment, and integrating Alpha into your existing computing environment — whether that environment is based on a current VMS, ULTRIX, non-Digital UNIX, or proprietary platform. Service offerings include:

- Specific application porting services
- Overall conversion and supporting tools
- Configuration services
- System management support, such as performance tuning and capacity planning
- Network design and management services
- Customer training and consulting services
- Hardware and operating system support on both Alpha and multivendor platforms.

All in all, Digital can provide a complete single source of support for your open computing environment.

Q. Does migration to Alpha mean costly change and/or obsolescence of current computing equipment?

A. No. In fact, Alpha was designed to be integrated into your existing computing environment. This means you can take immediate advantage of improved system performance while maintaining compatibility with the computing environment already in place. Moreover, Digital can assist you in protecting your hardware/software investment by offering a flexible portfolio of migration, assessment, porting, configuration, and consulting services — whether you are evolving from an existing VMS or ULTRIX platform, or moving from another vendor's platform.

We have also set up Application Migration/Resource Centers throughout the U.S., Europe, and the General International Area (GIA) — centers that are designed to assist you in planning and implementing Alpha into your environments. Our new focus on multivendor support allows you to choose one vendor to manage your complete training needs, regardless of the technology or application.

Alpha's high-performance platform will pave the way for several emerging technologies such as AI, object-oriented databases, imaging, and multimedia. This will allow you to implement the system architecture necessary to support your business processes in order to maintain a competitive advantage.

Q. As an OSF or future NT customer, will I be forced to migrate? As a VMS customer, will I be forced to move?

A. The answer to both questions is no. Alpha will support OpenVMS, OSF, and NT — and all three operating systems will be compatible within their respective orientation. Also, all three systems will be compatible with many of the same industry standards. Digital's technology assessment consulting services can help you determine the environment that is truly optimal for your business.

As a VMS customer, you will not be forced to move. In fact, since OpenVMS will be offered with Alpha, you can integrate into your existing computer environments and run your existing applications though a simple recompilation process. As a result, you will be able to maintain a single VMS source.

In response to questions concerning other computing environments:

- ULTRIX customers will be able to move their applications to OSF with minimal effort — just like our VMS customers. Because OSF is based on the OSF standard, all applications based on OSF specifications will recompile and execute under Alpha.
- Applications developed under POSIX will move between OpenVMS and OSF as well as other POSIX-compliant systems. OpenVMS has also received XPG3-BASE branding from the X/OPEN Consortium.
- Alpha will be offered with NT from Microsoft and will support any NT application.

Most applications will recompile and execute under Alpha. Some applications can take maximum advantage of Alpha's performance capabilities as a result of tuning and performance optimization work.

Digital will support you with open training courses, such as our recently announced support for all Microsoft course offerings. In addition, qualified consulting services will help you build an open multivendor environment. All in all, Digital's consulting and training services will help you rethink, reengineer, retool, and reenergize your business processes.

Q. What is Digital doing to help me understand the need to plan for change and to help manage my computing environment?

A. We offer a full portfolio of Alpha services designed to assist you in the planning, design, implementation, and management aspects of Alpha as you begin to integrate and utilize this new Digital technology. These include:

Consulting Services
These offerings are designed to help you understand how to maximize the advantages of Alpha technology in redefining your business processes and in designing your information technology plan for the future.

Application Services
Providing a range of offerings, including tools and assistance, these services help you to fully integrate Alpha into your existing computing environment.

Configuration Services
These services are designed to assist you in understanding how to take maximum advantage of Alpha technology.

Learning Services
Offerings in this category are designed to provide your employees with training on Alpha technology and related products. Courses such as change management are also offered to help management deal with the evolving computer technologies of the '90s.

Hardware, Software, and Network Services
These services not only support Digital's Alpha products, but also provide multivendor support offerings, such as LAN integration, multiple OS support, hardware services, and support for industry-standard applications.

Q. Will I get stuck if I don't move to Alpha? In other words, will technology and support pass me by? On the other hand, if I choose to move to Alpha, will my current equipment become obsolete?

A. Whether you choose to move to Alpha — or choose not to at this time — you most certainly will not "get stuck." We will continue to provide enhanced Alpha-ready VAX systems that are board-upgradable to Alpha, as well as ongoing service for both VAX and DECsystem platforms. What's more, you will continue to receive all the advantages of OpenVMS and OSF whether you use VAX platforms, DECsystem platforms, or Alpha.

Applications currently used on VAX will be available on Alpha. To that end, we are working with software vendors to ensure the availability of more than one thousand initial applications for Alpha — with many more to follow.

Q. How does Alpha fit in with Digital's ongoing service strategy?

A. Alpha provides the industry with a proof point of Digital's commitment to Open Systems and continued price/performance leadership — the kind of price/performance leadership already offered by VAX systems. This commitment to Open Systems is supported by the licensing of the Alpha architecture, industry-standard operating systems (OSF, NT, OpenVMS), and broad-based applications support. Alpha supports, enhances, and enables Digital as a leading-edge, Open Services company — strategically positioned to be a single-source provider of multivendor services and systems integration capabilities.

Alpha can be a key enabler for you by providing key opportunities to reengineer unproductive business practices. Digital Services plays a leading role in providing you with the consulting and assessment needed to maximize your business opportunities.

For more information on Digital's Alpha Services, call Peter Jansen at 508-496-8857.

Brighten Up Your Financial Picture with Digital Leasing

Along with the general benefits of stretching your technology budget and implementing your business plans quickly, certain types of leasing can favorably "window dress" your company's financial statements — positioning your organization as one that is stronger, more liquid, and more profitable. To that end — and for maximum benefit from your leasing options — it's important that you distinguish between the operating and the capital lease.

Capital and Operating Terms Defined

A lease contract that is a true rental arrangement is called an operating lease. In this type of contract, you have full use of the system, while the lessor maintains system ownership. The operating lease is, in both form and substance, a lease.

However, a lease contract that transfers the characteristics and benefits of system ownership to you is called a capital lease. Although a lease in form, the substance of this type of transaction is that of a purchase — and treated just like any other company asset that has been purchased.

In other words, a capital lease is shown, or capitalized, on your financial statement as an asset. At the same time, a corresponding liability of the same dollar amount as the asset is recorded on the balance sheet. This liability is amortized over the life of the lease the same as the outstanding debt on an installment loan.

Classifying Your Lease

A capital lease reflects ownership, whereas an operating lease reflects usage only. In determining the classification of a lease — either capital or operating — the Financial Accounting Standards Board No. 13 (FASB 13) uses the following four criteria:

- The lease automatically transfers ownership to the lessee.
- The lease contains a bargain option.
- The lease term is equal to 75 percent or more of the estimated economic life of the leased property.
- The present value of the minimum lease payments, at the beginning of the lease term, equals or exceeds 90 percent of the fair market value of the property.

If any one of these four criteria is met, the lease will be classified as a capital lease. If none is met, the lease becomes, by default, an operating lease.

The Operating Lease Paints a Pleasing Financial Portrait

In the case of an operating lease, the leased system is not capitalized nor is the corresponding liability recorded on the balance sheet. What's more, the only expense appearing on your income statement attributable to the lease would be the lease rental expense.

This type of off-balance-sheet financing has many advantages, including dressing up your financial statements by improving your company's financial ratios, at least initially. As the operating lease does not create a liability on the balance sheet, your organization also appears to be less leveraged — making your financial picture more appealing to potential lenders. In addition, an operating lease helps you lower your asset base, as well as increase your reported earnings. In short, an operating lease enables you to remove a portion of your debt obligation from the balance sheet. Thus, your financial statements — and your entire organization — appear more solvent and less encumbered by debt.

Making your financial statements look as strong and healthy as possible to shareholders and lenders is high on your list of priorities. The use of operating leases can help you achieve this goal.

Take Advantage of Digital Leasing

Leasing — operating or capital — is one of the most popular and economically sound means of acquiring computer equipment today. Find out how your company can benefit from leasing Digital products by calling 800-322-3239 (or 800-343-3451 inside Massachusetts). We'll put you in touch with one of our leasing experts, who can answer your questions and provide you with a FREE copy of *An Executive Guide to Computer Leasing*.

TurboWare Packs Your System with HIGH-PERFORMANCE PUNCH

Digital and EEC Systems have great news for VAX 4000, 6000, 9000, and MicroVAX system users. It's called TurboWare — a performance package of Digital memory and EEC Systems SuperCache.

If you seek cost-effective system performance gains, Digital and EEC Systems give you the perfect hardware/software solution.

SuperCache, a software accelerator for VAX VMS systems, runs automatically and can generate significant performance improvements — as much as 2 to 15 times your current performance — within seconds of installation.

Utilizing caching technology, SuperCache uses 100 percent of your system's free memory to move data from frequently used files into main memory. However, it has the ability to return memory back to VMS upon demand. For high-performance results, it is necessary to have at least 10 percent or more free memory when using SuperCache — the more free memory available for caching, the greater the performance results achieved.

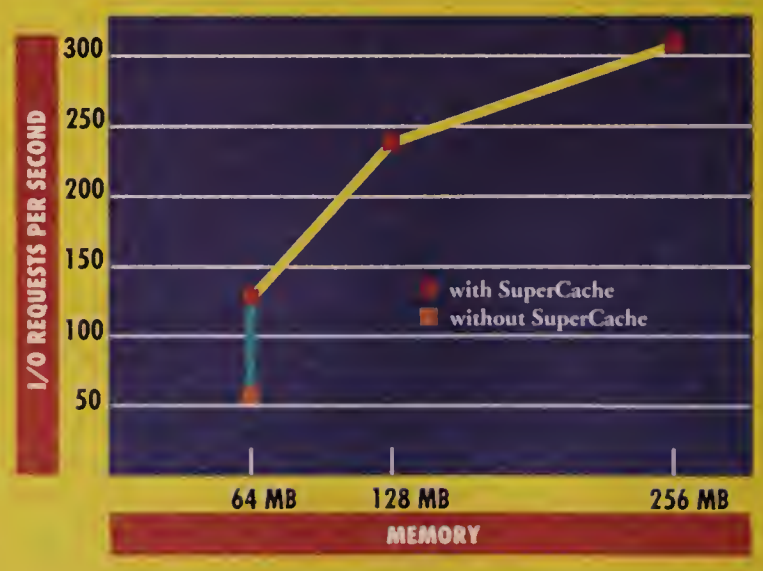
SuperCache capabilities combined with Digital high-performance, high-reliability memory options make TurboWare the ideal solution for all your applications, especially read-intensive applications. TurboWare increases system performance by eliminating I/O bottlenecks caused by slow disk response time.

For this reason, TurboWare significantly enhances billing, distribution, banking, and manufacturing systems applications.

Ultimately, TurboWare provides you with significant cost-savings through increased system performance and user productivity.

Call for Free Software Trial

For a free TurboWare brochure, or a 30-day free trial of SuperCache software and free consulting service during the same time period, call EEC Systems at 800-388-8872, or fax EEC at 508-443-9997.



How good is the SuperCache/Digital Memory team? The graph shows a doubling of I/O requests per second when SuperCache is added to a VAX 6240 (64 MB), running a software development testing application. What's more, the graph displays a continued increase in I/O requests per second being serviced as more Digital memory is added.

The following are trademarks of Digital Equipment Corporation. DECdirect, DECsystem, the DIGITAL logo, Open Advantage, VAX, VAX 6000, VMS. AIM is a trademark of AIM Technology, Inc. Microsoft is a registered trademark of Microsoft Corporation. NFS is a trademark of Sun Microsystems, Inc. ORACLE is a registered trademark of Oracle Corporation. OSF is a registered trademark of Open Software Foundation, Inc. SPEC is a trademark of Standard Performance Evaluation Corporation. SuperCache is a trademark of Turbo Systems International. TPC-A and TPC-B are trademarks of Transaction Processing Performance Council. UNIX is a registered trademark of UNIX System Laboratories, Inc. Listed prices are U.S. Manufacturers' List Prices and are subject to change.

Items of interest from publications, speeches, surveys and research projects

Patience pays

■ It's a common mistake for companies to set short-term financial goals for advanced manufacturing technology, according to Carol Beatty, an associate professor of management at Queen's University School of Business in Kingston, Ontario. Beatty, who recently completed a four-year study of advanced manufacturing implementations at 10 companies, says this approach almost always guarantees disappointment because many such projects take at least a year, often two, to install — and even then usually don't produce immediate benefits.

Only half the companies that try to implement advanced manufacturing technology actually reach their original goals, she says. The other half wind up dead-ended or off-track, usually because of management problems.

Source: *"Implementing Advanced Manufacturing Technologies: Rules of the Road," by Carol A. Beatty,* Sloan Management Review, *Summer 1992.*

Games CEOs play

■ Management consultant Charles F. Hendricks says he sees much of the current reorganizational activity in corporate America as shallow, knee-jerk reactions that give chief executive officers something to point to but generate little in the way of productive change.

"It is not a coincidence that terms such as *restructure* and *downsize* dominate management thinking," Hendricks writes. "Tables of organization and staffing are tangible — you can see them, you can count boxes, lines and people and, most importantly, you can write them down on a piece of paper. . . . CEOs, when they appear to be losing ball games, restructure and downsize and then show the investment community another piece of paper to demonstrate that they are in control — they are organized. 'So it is written, so it is done!' "

Source: *"The Rightsizing Remedy: How Managers Can Respond to the Downsizing Dilemma," by Charles F. Hendricks, published by the Society for Human Resource Management and BusinessOne Irwin.*

Give to get

■ Whitmire Distribution, a Folsom, Calif.-based wholesale distributor of pharmaceuticals, invested three years developing an inventory management system, which it provides free of charge to its 7,000 customers.

Reportedly, many customers have been able to reduce their on-site storage by up to 40%.

Source: *Financial Strategies section,* Inc. *magazine, August 1992.*

Intelligence barriers in Europe

■ Collecting information on the competition can be tough for U.S. companies operating — or planning to move operations into — European companies, according to *International Business.* While business information is fairly accessible in the UK, Sweden and Belgium, many other countries present considerable challenges.

Among the toughest are the Netherlands, where public records on businesses are scattered in local town halls, and Germany, where the data protection law passed to protect individuals is also often used by companies to avoid releasing even basic information such as the number of employees on their payroll.

Source: *"Super Snoops," by Dave Savona,* International Business, *May 1992.*

Surviving the maquiladora audit

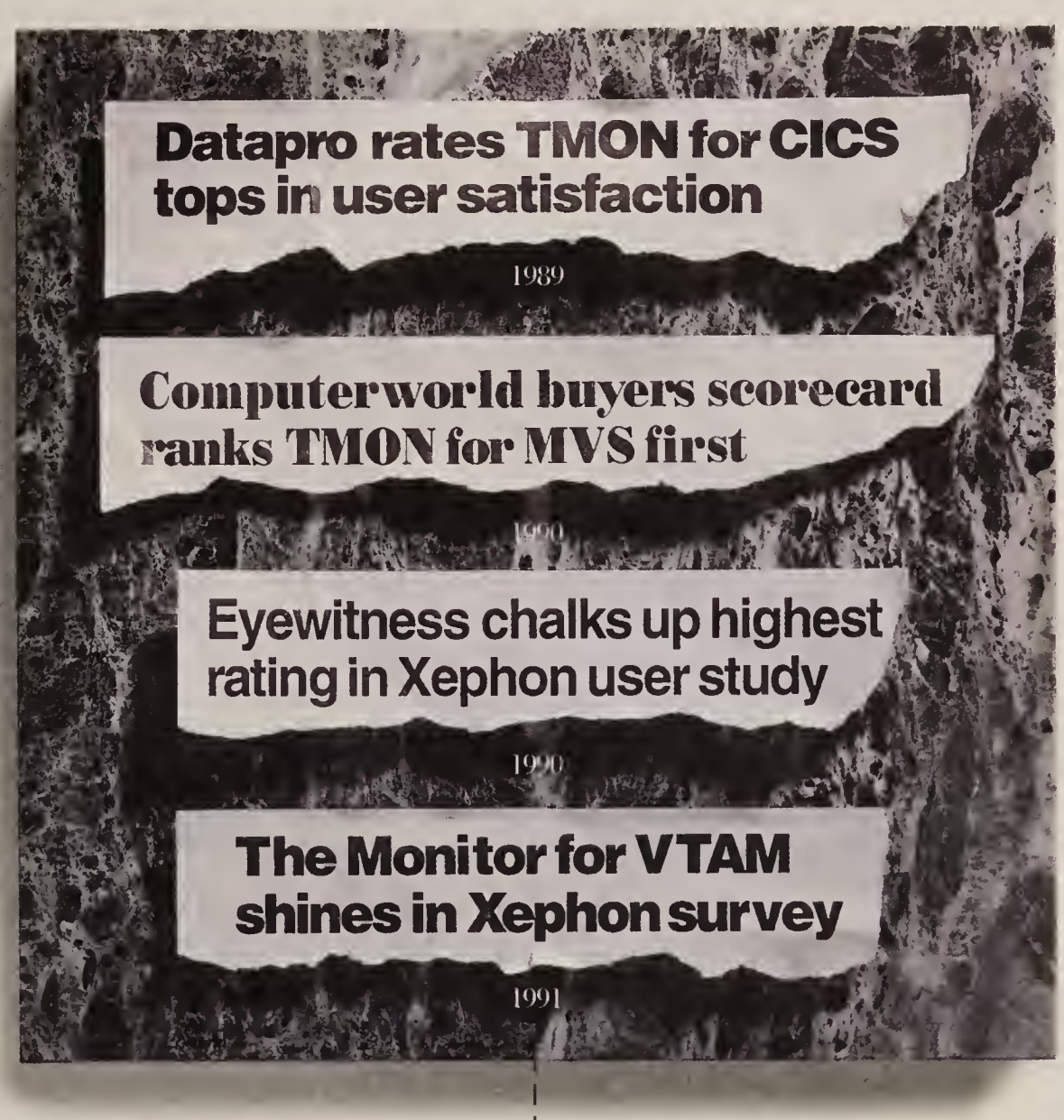
■ Hundreds of U.S. companies have opened assembly plants called "maquiladoras" across the border in Mexico to take advantage of Mexico's low labor rates and then send the assembled products back to the U.S.

However, to be sure that the products qualify for low import tariffs, the U.S. Customs Service must be able to audit the organization's cost accounting systems.

Companies must provide the government auditors with read-only access to the accounting systems and with programmers who can retrieve and sort the necessary data.

Source: *"Maquiladoras, From an Auditor's Point of View," by Willie del Barrio et al,* Global Trade Talk, *July/August 1992.*

Compiled by features editor Joanne Kelleher with contributions from Mitch Betts, national correspondent.



TNET.™

A SYSTEMS MANAGEMENT BREAKTHROUGH THAT WASN'T BORN YESTERDAY.

There's nothing like the thrill of discovering new technology that makes your job easier. Better yet – a quantum leap that's well-grounded in time-tested, top-rated products. Take TNET™. When it comes to improving IBM systems performance, only TNET – the architecture on which our networked family of performance tools is based – takes you straight from problem to solution.

Best of all, TNET is based on industry-leading performance monitors and proven problem management products. **World-class tools** that users and independent researchers alike rate number one in value, service, and ease-of-use.

So, if you want tomorrow's solution that already has a reputation for excellent results, call us. We'll be happy to share with you some user success stories and industry studies from *Computerworld, Xephon,* and *Datapro.*

THE LANDMARK ADVANTAGE

THE MONITOR FOR CICS® • THE MONITOR FOR CICS® (VSE) • EYEWITNESS® • THE MONITOR FOR MVS®
THE MONITOR FOR DB2 • THE MONITOR FOR VTAM • NAVIGRAPH™

Landmark Systems Corporation® 8000 Towers Crescent Drive Vienna, VA 22182 1-800-227-8911 LANDMARK™

SELL MORE PRODUCT.

Advertise in Computerworld's Product Showcase. It works.

800-343-6474
x744

There's nothing innovative about copying.

On Friday, July 31, 1992, a U.S. District Court ruled that Borland's Quattro® and Quattro Pro® spreadsheets infringe the copyrights of Lotus® 1-2-3.®

In its ruling, the Court concluded that "... the Quattro programs derive from illicit copying," holding that "Lotus has sued" and "Borland is liable."

Lotus innovated. Borland copied.

We sued to protect our intellectual property rights. And in winning we've helped preserve an environment in which independent software developers can freely develop innovative new products without fear that their creative work will be stolen. We sued to protect innovation, not to stifle it. Borland's copying is no different from someone plagiarizing *The Grapes of Wrath*, changing the ending, and calling it a new novel. It's really that simple.

But the courtroom is just one of the places where Borland® has lost.

They've lost in the marketplace, where 1-2-3 for DOS continues to dominate. Based on a recent report from the Software Publishers Association,* Lotus 1-2-3 accounts for seven out of 10 new DOS spreadsheet purchases and over 80% of all DOS spreadsheet revenue.

They've lost in performance categories, despite their claims to the contrary. For example, in a recent National Software Testing Laboratories performance test,** 1-2-3 Release 2.4 beats Quattro Pro 4.0 hands down in areas users care about most. The tests reveal that 1-2-3 Release 2.4 is four times faster than Quattro Pro 4.0 in retrieving a .WK1 file; 18 times faster at moving a block of data; three times faster at product load; one-and-a-half times faster at printing; and 35 times faster scrolling right or left in graphical mode.

They've lost on the innovation front, too. Lotus 1-2-3 was the first DOS spreadsheet to introduce innovative technologies such as true 3D worksheets, the Viewer, WYSIWYG display, DataLens,® and unique one-click SmartIcons.™ And we're still the only spreadsheet that offers true compatibility across platforms.

Who should you trust?

But perhaps most importantly, Borland lost what matters most to customers: credibility.

For instance, Borland told the Court they needed to copy our menus to achieve macro compatibility with 1-2-3. Now they tell their customers that the 1-2-3 menus aren't critical to compatibility.

So ask yourself: to what extent can you trust a company that values what is expedient over what is legal? And to what extent can you rely on the product it wants you to buy?

Here's our advice: choose the product, and the company, you can trust. Choose Lotus. After all, we're the best in the business at building innovative spreadsheets. Always have been, always will be.

Case closed.

Lotus

*Based on Software Publishers Association revenue and unit share data, May 1992, for North America. **NSTL standards used in tests performed on an IBM® AT™ 286 with 640K memory. © 1992 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3 and DataLens are registered trademarks and SmartIcons is a trademark of Lotus Development Corporation. Quattro, Quattro Pro and Borland are registered trademarks of Borland International, Inc. IBM and AT are registered trademarks of International Business Machines Corporation.

Mentors can help make or break a career

BY KATHLEEN GOW
SPECIAL TO CW

Mentoring saved Howard Piggee's job. And lack of mentoring almost cost Harvey Shrednick his.

Shrednick, senior vice president of information services at glassware company Corning, Inc., was nearly fired from the Corning, N.Y, company for failing to go through the proper chain of command on a personnel decision — a transgression that a mentor could have warned him about.

"I suffered from not having a coach," Shrednick says. "A mentor might have shared his mistakes."

He turned the experience around and hopes to help others avoid such mistakes by participating in Corning's formal mentor program. He now coaches Piggee, an information systems business manager at Corning's Science Products Division.

It's a good thing Piggee had a coach; without a veteran's insight into corporate culture and the style of particular players, he says, "there is a good possibility that I would have left the company soon after starting."

But while everyone seems to want a mentor, few IS professionals take the initiative to find one when there's no formal program.

Their resistance is understandable; many lower level professionals don't like to admit they need help with something. "They feel they can do it on their own — and they probably can — but outside support would make it easier," says James Lawler, vice president of sales management systems at the Advanced Office Systems Group (AOSG) of Merrill Lynch & Co. in Princeton, N.J.

Lawler, who also mentors IS students at Pace University in New York and St. Francis College in Brooklyn, N.Y., says, "People feel shy about asking for support, but some are very turned on about sharing their experiences."

AOSG's Patty Millward agrees. "I wanted guidance on making a career change," says Millward, associate marketing manager in business financial services in Chicago. "As a woman in a male-dominated field and company, I wanted to know, how do you handle this from a political perspective?" She identified a very visible woman in the company whom she wanted to emulate and approached her.

"I said, 'I have some career issues I'm dealing with; I really like your style and I would like to spend some time with you.' She was flattered and said, 'Sure,'" Millward says.

Building the relationship

While some people choose mentors to help them with interpersonal situations such as handling a tough boss, others look to their IS mentors for technical education and direction.

Marcia Duhart, a senior systems analyst at AOSG, selected a mentor with a strong systems background who had worked for the company for 18 years.

Some "mentorees" derive more benefit from being mentored by colleagues who work in other departments. Millward said that having guidance from someone in a different department fostered openness. "I could be frank with her, and she was candid with me," she said.

Millward's mentor gave her direction in negotiating for a higher position. "I had never negotiated before," she says. Her mentor pointed out from an employer's standpoint issues that would not be negotiable and how to present things in a subtle way.

Programs like those at Merrill Lynch's AOSG and Corning usually give initial training to both mentoree and mentor, setting guidelines for the relationship.

"You have to be flexible with schedules," Millward says, while at the same time making sure that your mentoring meetings are a priority. Some find it easiest to meet in either person's office during the workday. Others opt to meet for lunch in the freer environment of a restaurant.

The most important requirement for seeking out a mentor is knowing your objective: Do you want someone to answer day-to-day questions or someone who will get involved in your career?

The coach also needs to make the coachee comfortable by bringing up issues about the relationship. According to Piggee, "A long-term coach has to be willing to trust the coachee enough to share his experiences and feelings and give guidance that is maybe not the corporate line."

Gow is a free-lance writer based in Medford, Mass.

Ground rules

Once you've identified a potential mentor, the next step is to see if the other person is willing. When a relationship is established, veteran mentors and mentorees recommend that participants address the following:

Agree to terms at the first meeting.
- What does each party expect from the relationship? What are the boundaries?
- How much time should be spent? During work or after?
- When and where is it OK to call?
- What areas will be covered? Professional only?
- What level of confidentiality do you expect?

Be willing to accept responsibility.
- Mentorees are responsible for their own career.
- Mentorees should drive the relationship; set a specific agenda so that the mentor knows you are serious.
- Mentors should be willing to share experiences.
- Mentors should encourage two-way communication.

Do a process check every few months to make sure the relationship is still on target.
- Is it a two-way relationship?
- Is the mentoree taking any advice given?
- Is the mentor pontificating?

FLORIDA
SYBASE * "C" * APT
HP3000 * COBOL * IMAGE
INFORMIX * 4GL * SQL
C; DOS * ATM'S
TANDEM * COBOL * TAL
MSA * IE * FIN. CONT.
CNE * END USER SER.
MICRO FOCUS COBOL
ASSEM * COBOL * CICS

COMPUTER BUSINESS ASSOC.

TAMPA:
500 N. Westshore Blvd
Tampa, Florida 33609
(813) 287-2100
FAX (813) 287-2954

ORLANDO:
102 Spring Lake Lane
Altamonte Springs
Florida 32714
(407) 788-8696
FAX (407) 788-8867

Farrell and Associates

M&I Permanent
Hogan Consulting
Hogan Permanent
CPCS Permanent
Sybase Permanent
DB2-CSP2 Permanent

Phone: 813-530-0207
Fax: 813-535-1401

PO Box 1678
Largo, FL 34649

Account Executives

Software AG has met the distributed enterprise computing challenges of the 90's and retains its position as a world leading software company. With a host of UNIX products and sophisticated Client Server technologies, our Account Executives are equipped to address the needs of the CIO today.

We're looking for experienced sales professionals to strategically position Software AG as a long-term business partner to new name accounts as we continue to expand our client base in every major city throughout the U.S. If you'd like to discuss this opportunity to stay current with emerging technologies and represent a company with impeccable references, drop us a line we'd be glad to hear from you.

Profitability, Stability, Independence and Growth; Characteristics of Software AG. Look it up. Software AG, 11190 Sunrise Valley Drive, Reston, VA 22091, Attn: CW, FAX: 703-391-8340. An equal opportunity employer.

SOFTWARE AG
Solutions Worldwide

SYSTEMATICS PROFESSIONALS

Join the Logica systems consulting team.
- Project Managers
- Senior Analyst / Programmers
- Senior Business Systems Analysts

Assignments in U.S.A. and International sites.

Logica North America Inc. enjoys a worldwide reputation in technical and business systems consulting and training for the financial services industry.

Due to rapid business expansion, Logica North America Inc. has consultancy positions available for Project Managers, Senior Analyst / Programmers and Senior Business Systems Analysts with "hands-on" experience in a SYSTEMATICS environment and with a solid understanding of the banking business. Our consultants are involved in all activities related to the implementations of banking systems. This includes feasibility studies, analysis, design, program development, testing, training and support.

We are seeking consultant level professionals with a minimum of 6 years' IBM Mainframe experience, who understand the retail banking business functions and have at least 4 years of experience in SYSTEMATICS applications. Candidates must be able to travel and be available for short and long term assignments in the United States and / or International sites.

We offer an excellent salary, travel package and comprehensive benefits. Please send resumes to: **Recruitment Manager, Logica North America Inc., 1801 Avenue of the Stars, Suite 1415, Los Angeles, CA 90067. FAX: (310) 785-0505.**

An equal opportunity employer, M / F / D / V.

Logica North America Inc.

logica

RIYAD BANK

Saudi Arabia

Riyad Bank, one of the largest and most prominent banks in the Middle East with a network of over 160 branches in Saudi Arabia, is offering excellent opportunities in its Information Services Division, based at its Head Office in Riyadh.

Extensive changes are underway in the Bank's technology and applications environment which will either vastly expand the Bank's current IBM environment or supplement it with alternative competitive technology.

To implement these changes the following critical positions in the organisation will need to be filled forthwith:

Essential requirements for all positions are:
- A University or College Degree or equivalent.
- 10-15 years experience in a computer services environment, preferably with recognised financial institutions.
- Minimum 3 years in a managerial position.
- Experience in an overseas work environment, in particular the Middle East.

SYSTEMS DEVELOPMENT MANAGER

Major responsibilities:
- All Systems analysis and programming activities.
- Software analysis and programming.
- To provide overall direction, integration, and control over the flow of information between existing and new acquired packages.
- To manage 3rd party application software delivery, installation, maintenance, enhancements and integration activities.

INFORMATION SERVICES TRAINING MANAGER

Major responsibilities:
- All training activities in the Information Services Division.
- Development of training programmes and analysis of training needs for staff.
- Formulating training policy for the Division.

INFORMATION RESOURCE MANAGER

Major responsibilities:
- The review and coordination of systems prior to the production stage of the Systems Development Life Cycle. Ensuring appropriate standard of Quality Assurance, Security and Control, Disaster Recovery, Project Management and Documentation.

Experience in the following environments is preferable for all positions, in particular the Systems Development position:

- IBM 30XX
- Tandem
- AS/400
- PC Work Stations/LANs
- X-25
- MVS/CICS/DB2

Fully competitive compensation packages will be offered to the successful candidates.

Applications should include current salary and benefits and should be directed to:

RECRUITMENT DEPARTMENT
RIYAD BANK
P.O. BOX 22613, RIYADH 11416, SAUDI ARABIA
Fax # 966-1-4057353

DATABASE PROGRAMMERS

ADABAS/NATURAL
(Richmond, Virginia)

ADABAS specialists are needed for a challenging assignment to provide analysis, design, programming and user support for large on-line IBM systems. These positions require a background in ADABAS 5, NATURAL 2.2, and a minimum of 2-5 years in DP. Excellent customer service skills are required. These are long term assignments.

DATACOM/DB
(Ogden, Utah)

Junior to Senior level DATACOM/DB programmer/analysts with solid COBOL, JCL, CICS and native call DL are needed for a temporary duty assignment in UTAH. Backgrounds should include knowledge of inventory systems (military preferred), IBM MVS environment, with exposure to SAGE APS a big plus. We need team players with strong work ethics. (Skiing nearby).

PINKERTON is an employee-owned company in business since 1967. We offer excellent company-paid benefit plan for our full time employees. CONSULTANTS are also welcome to apply. For more information, please call Paige Gordon at (703) 820-5571 and/or send resume with salary requirements to:

PINKERTON
COMPUTER CONSULTANTS, INC
1900 North Beauregard Street,Suite 200
Alexandria, Virginia 22311
Fax (703) 820-7465

Equal opportunity employer/Principals only

FOR WINNERS ONLY!

KENTUCKY

Technology Consulting, Inc. is a dynamic and rapidly growing Software Development Company with challenging assignments. Our immediate and continuing needs are:

DEC/VAX - ORACLE - FORTRAN

- TANDEM
- CSP
- IMS DB/DC
- ADW/IEW
- DB2
- OS/2
- CICS
- C/C++
- AS/400
- NOVELL NETWARE
- ADABAS/NATURAL
- MANTIS/SUPRA
- OFFICE AUTOMATION

TCI offers competitive salaries, attractive benefits, and relocation assistance. For consideration, send resume or call:

TCI TECHNOLOGY CONSULTING INC.
MEMBER NACCB

1800 Meidinger Tower
Louisville, KY 40202
(502) 589-3110
FAX (502) 589-3107

1992 NACCB Conference

St. Thomas

Don't miss the opportunity to improve and expand your business!!! Network and strategize with owners and managers of leading computer contract/consulting firms.

Oct. 14 – Oct. 17, 1992
Frenchman's Reef
Beach Resort

For more info, call:
(800) 880-1240

NACCB
National Association of Computer Consultant Businesses

Engineer, Senior Software, responsible for the documentation, testing, design & implementation of 3D graphics software components for use within a family of graphics workstation products. Tasks include writing both client & internal server side PEX software. Requirements for this position are a Master's in Computer & Informational Science or Computer Engineering, & a demonstrated ability to research & develop optimized algorithms for 3D graphics. Candidate must possess a background in writing computer gaphics applications using X-windows & XToolKit, writing & debugging software written in C & a complete knowledge of geometric modeling, numerical analysis & advanced graphics rendering algorithms, including methods to generate Bezier & b-spline curves & complex objects, polygons, hidden line & hidden surface removal, illumination models, & clipping. Knowledge of computer networking, network control & design, UNIX operating system internals, data base management, & error analysis techniques are also required. Salary $48,318.40 per year. 40 hrs/week. 8:15 a.m. - 5:00 p.m. If you are interested in & qualified for the above position, please forward this ad & your resume or letter of qualifications to Job # MLM # 15523, P.O. Box 9560, Sacramento, CA 95823-0560 no later than September 3rd.

SOFTWARE ENGINEER required. Design, development, coding, testing & implementation of systems software & database software using ADABAS DBMS, Predict & NATURAL2. Systems Programming using C, ADABAS SQL, UNIFY RDB, Fortran, COBOL & CICS. Applications development using CASE tools & Data Manager. Perform data tuning & data modeling & provide technical support in a variety of environments including VMS/VAX, IBM-MVS, UNIX OS & PC-DOS. Bachelors degree or its equivalent required in Math, Computers or Engineering with at least 5 years experience in the job offered, or 5 years experience with Database Systems Design, Development & Coding. The 5 years must include 3 years ADABAS DBMS, Predict, NATURAL, C, ADABAS SQL, UNIFY RDB, COBOL, CICS & Data Manager & must include data tuning & data modeling experience as well as experience in VMS/VAX, IBM-VMS, UNIX OS & PC-DOS operating environments. Must be willing to work for a software consulting firm with relocation likely every 1 to 2 yrars. Applicants must have proof of legal authority to work in the U.S. Annual salary will be $42,000.00 per year for a 40 hour work week. Interested applicants send resumes to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Reference No. 53292. Employer Paid Ad.

SOFTWARE ENGINEER - Responsible for designing and developing expert system software applications for clients utilizing expertise in artificial intelligence systems. Participates in project development process. Contributes improvements to the company's software methodology, procedures and technical organization. Develops feasibility studies and cost/benefit analysis. REQUIREMENTS: Bachelor's degree in Computer Science and minimum 2 years experience in: C, Artificial Intelligence Expert Systems, AION Expert Systems, Presentation Manager, OS/2 and JCL; extensive knowledge of project management, analysis and design techniques, and data processing methodologies. $54,513 per year. 40 hours/week 8:00 a.m. to 5:00 p.m. Respondent must be presently eligible for permanent employment in the U.S. The job order number for this job opportunity is 584922. Send resume to: ATTN: Shirley J. Gregory, MISSOURI DIVISION OF EMPLOYMENT SECURITY, 1411 MAIN STREET, KANSAS CITY, MO 64105. An employer paid ad.

CONSULTANTS SHOULD CONSULT

MIMI

Great Consulting Assignments and Full Time Opportunities
Please send resume & call:

Mimi Simon Assoc
90 West St. Suite 1105, NYC 10006
(212) 406-1705
FAX (212) 406-1768

SOFTWARE ENGINEER - 40 hrs./wk., 8am-5pm, $40,000.00 per yr. To analyze, design, develop and maintain software application systems on IBM mainframes and PC workstations. Confer with client, develop prototypes, implement and carry out database performance tuning on DB2 databases utilizing 4GLS, CASE Tools and business languages. Requires Bachelor's degree in Computer, Electrical or Mechanical Engineering, 2 years experience in job offered or 2 years experience as Programmer/Analyst. Experience with IBM 3090, IDMS, CASE Tools and DB2. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 55592.

Senior Business Programmer (Orlando, FL client sites). Design, write, test, implement & maintain RPG II and RPG III programs for commercial applics, systems in IBM S/36 & S/38 computer hardware environments. Bachelor's Degree in Comp. Sci., Data Proc. or Math, + 2 yrs' exper. in job. $48K/yr; 40 hr/wk; 8:30 a.m. - 5 p.m. Report or send resume to: JO # FL 0661798, Orlando Job Service Office, 3421 Lawton Rd, Orlando, FL 32803.

PROGRAMMERS

CTS has current opportunities both CONTRACT & PERM.

- Recent IMS or CICS.
- Vantage, ISA or any Life Insurance.
- Any Banking; Comm Loans (M&I), Credit, EFT, Deposits, CD's.
- Payroll, inventory.

Pls Fax or Mail Resume:

CENTRAL TECHNICAL SERVICES
550-5 Wells Road, CW824
Orange Park, FL 32073
(904) 264-4251, FAX 264-7541

TANDEM
COBOL, PATHWAY,TAL, SCOBOL,C, SQL,X.25

STRATUS
PL1,COBOL,C,ON/2

MUMPS
DSM, ISM, MSM, GTM, IBM RISC/6000 M-SQL
Fulltime/Consulting Positions available in the US/ABROAD

STRATEM
800-582-JOBS
TEL (212)967-2910
FAX (212)967-4205
124 W 30th St Suite #302
New York, N.Y.10001

How to place your recruitment ad in Computerworld

It's easy. All the information you need is right here. Just fill out the form and send it in. Or call Lisa McGrath at (800) 343-6474 (in MA, (508) 879-0700). (You can even fax the form to us at (508) 620-7739).

Rates:

☐ **One Region - $182.95 per column inch**

☐ East ☐ Mid-West ☐ West

☐ **Two Regions - $228.69 per column inch**

☐ East/Midwest ☐ Midwest/West
☐ East/West

☐ **Nat'l Edition - $251.57 per column inch**

All closings for space, camera-ready materials, and telephoned copy for pub-set advertisements are 3 p.m. Thursday (all continental U.S. time zones) 2 working days prior to the Monday issue. Blind box charges are $100 (U.S.) and $200 (Foreign).

Copy:

We'll typeset your ad at no extra charge. Please attach clean, typewritten copy. Figure about 25 words to a column inch, not including headlines. Minimum ad size is 2 column inches. Any special artwork should be enclosed with your ad also. Logos must be submitted on white bond paper for best reproduction.

Issue Date(s): _____
(issued every Monday)

Name: _____

Title: _____

Company: _____

Address: _____

_____

_____

Telephone: _____

COMPUTERWORLD
CLASSIFIED ADVERTISING
Box 9171
Framingham, MA 01701-9171

You can't be fired for innovation

Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is R. Max Steiner, a marketing director at Contract Solutions, Inc. located in Salem, N.H.

Q For the past three years, I have been developing my own database product. I believe I will have an excellent product to market. Can I be fired for developing my own product?

A Whether or not your employer has just cause to terminate you is dependent on your contract and any potential existence of a conflict of interest.

In most cases, you cannot be fired for trying to market a product of your own invention. However, you must not be in conflict with your current employers. Once you have prioritized your personal goals with your employment obligations, make sure you are not violating any contractual issues.

Do not attempt to develop a product that is competitive with your employer's. And never use your employer's invention or equipment to aid in your development efforts.

Q I am a programmer/analyst. Our department is using a System/38 and has no immediate plans to move to an Application System/400, so there's not much opportunity to expand my experience. Besides, I wish to work in a personal computer or workstation environment. What can I do?

A Volunteer at a nonprofit organization whose work you support. These groups are often in need of technical people to help with their databases. This would allow you to give back to the community, while at the same time expanding your skills.

FAST TRACK
CAREER ADVICE FOR THE '90s

Q I am a principal analyst at a large financial services organization. I have been approached about a possible management job and am unsure whether to accept. I do not want to wake up one day with my technical skills no longer in demand.

A First, take pride in being offered a promotion. Second, forget management vs. hands-on and focus on your own feelings. Do you feel challenged in your job? Is your company financially secure? Do you have a sense of loyalty to your company? If your answer to all these questions is yes, then accept your promotion with enthusiasm.

Once a decision is made to stay and pursue this promotion, then tackle the issue of management experience vs. hands-on experience.

Q If you pass an exam for certified computer programmer (CCP), certified data processor (CDP) and certified systems professional (CSP) and have these acronyms attached to your name, does it help you in your career?

A I have always questioned the effectiveness of certification programs. I have never had a client require certification in the backgrounds of candidates I place. Based on this experience, I would say that these programs do not help your career.

I do wish to stress that these programs can be useful. A person can take these certification tests to enhance his sense of professional worth.

☞*We want to hear from you. Call your career questions in using the Fast Track line at (508) 820-8522; send them via MCI Mail to KDWYER or send them by fax to Kelly E. Dwyer at (508) 875-8931. Letters may be edited for brevity and clarity. If we use your question, we'll send you a gift.*

TIP of the MONTH

How to turn down overtime without damaging your career

➤Try to negotiate when the overtime is put in as opposed to saying no. We'll accommodate a shift of work hours if people can focus on a deliverable better that way over a short period of time.

Irwin Bernstein, vice president, planning/administration
Maidenform, Inc., Bayonne, N.J.

➤Let your boss know you have plans before you're asked by dropping him (or her) a note. We have weekly meetings here and talk about a lot of things – and availability is one of them.

Dennis Love, IS director and vice president
Acme Thread and Supply, Inc., Los Angeles

➤If there's a good reason for declining, that's OK. But the staff should be flexible for critical business applications, and management should be flexible for personal emergencies.

Regis Garbo, director, data center and telecommunications
Lever Brothers Co., New York

➤You would have to choose very carefully when you turn down overtime because having a commitment to your career is part of moving through the management ranks.

Julie St. John, vice president of transaction processing and management
Fannie Mae, Washington, D.C.

➤There are sometimes legitimate, unexpected needs for overtime. Crises happen and deadlines flip, and people have to pitch in. Overtime can be an opportunity for recognition and advancement. But mandatory overtime — on management's part — is fear-based, exploitive and oppressive.

Brian Graham, project leader
Administrative information services
Columbia University, New York

Compiled by Leslie Goff, a free-lance writer based in New York.

SOFTWARE OPPORTUNITIES

Let our national AWARD WINNING computer specialists assist you in your search. We have over 300 affiliated offices around the country ready to work for you!

SYSTEMS SOFTWARE	$80K +
AS/400,S/38 P/A	TO $48K
LIFE INSURANCE	TO $60K
DB2 ANALYSTS	TO $60K +
IDMS, IMS OR ADABAS	TO $50K
P/A (COBOL OR ALC)	TO $40K
MVS OR VM INTERNALS	$ OPEN
ACF/VTAM/NCP	TO $50K
COBOL/CICS	TO $40K
UNIX INTERNALS	TO $60K +
UNIX/C	TO $55K
COBOL/DB2 OR IMS	TO $48K

PLUS OVERSEAS JOBS

ROBERT SHIELDS & ASSOCIATES
P.O. Box 890723, Dept. C
Houston, TX 77289-0723
713/488-7961
FAX 713/486-1496

CA & AZ CONTRACTS

CONSULTANTS WANTED

P. Murphy & Associates, Inc.
4405 RIVERSIDE DR., SUITE 100
BURBANK, CA 91505
(818) 841-2002 (714) 552-0506
FAX: (818) 841-2122
Member NACCB

DIRECTOR
MIS METHODOLOGIES

In the mortgage industry, one company stands out by setting the business and technology standards others follow — Fannie Mae. Our strong business performance, outstanding track record of success, and continued growth have created an opportunity for a Director, MIS Methodologies.

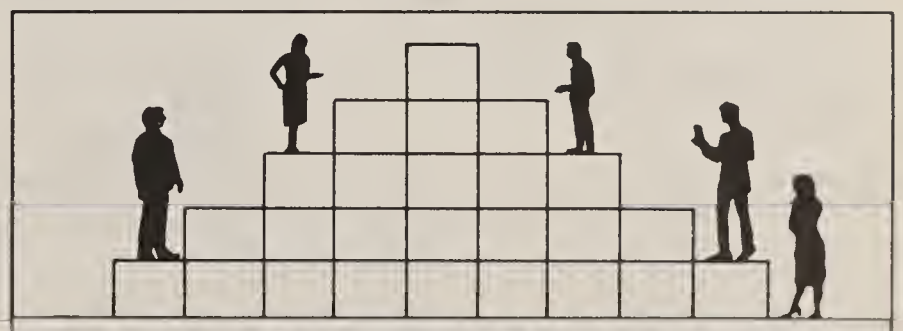
This top-notch professional will create systems development methodologies to support the system development life cycle on client/server platforms while emphasizing prototype development. The ideal candidate will have consulting experience and would have installed several systems architecture methodologies in client locations. You will also define and establish tools for the development life cycle including estimating, planning and project performance; ensure a high degree of integration between the methodologies and established tools; and effectively implement the methodologies.

These responsibilities demand a take-charge individual with a college degree with technical curriculum or equivalent, 10 years technical experience (1-2 years emphasis on methodologies and development tools), experience developing systems development methodologies, the ability to independently solve problems, and effective oral and written communications skills.

Join Fannie Mae for a highly competitive salary, health benefits, stock-ownership, employer-assisted housing, 401(k) matching, and more. For immediate consideration, send your resume to: Fannie Mae, Dept. JJ-207-160, P.O. Box 39192, Washington, DC 20016. For information on other positions, call our Job Hotline at (202)752-JOBS.

Fannie Mae is an Affirmative Action/Equal Opportunity Employer. We invite inquiries and applications from minorities, women, veterans, the disabled and members of other protected groups. We promote a drug-free work environment.

FannieMae
The USA's Housing Partner



Rise To The Challenge. Call COMSYS.

If you are at the top of your field and thrive on challenging opportunities to master new technologies, call COMSYS today. We're a leader in supplying Fortune 500 companies with computer software consultants. COMSYS provides competitive salaries and full benefits. We're looking for professionals with the following skills to become part of our nationwide team:

SMARTSTAR	IE - JAD, JRP	RDB/VMS	C OS/2 PM
CSP, DB2, CICS	DB2 DBA's	DBS	DB2 CICS
C, C++, 4GL	Tandem/NS SQL	ORACLE	VMEbus
ETHERNET	ADABAS/Natural	UNIX Sys Admin	Telon
C, VMS	EASEL	SQL Windows	IEF CASE
SYBASE	C, C++	FOCUS/VM	S/W Tech Wn.

COMSYS® computer project support
Dept. CW 4 Research Place, Rockville, MD 20850
(301) 921-3600 • FAX (301) 921-3700(fine)

800-926-6797

Atlanta • Colorado Springs • Dallas • Denver • Phoenix
Raleigh • Washington, DC

NACCB Member EEO M F H V

PROGRAMMER ANALYSTS/ PROJECT LEADERS

If you're a highly-motivated professional, ready to explore new levels of challenge in a sophisticated MIS environment, consider Ryder System, a $5-billion leader in the transportation services industry. Your expertise and creativity in business systems development will be of great importance as we continue to aggressively expand our global presence, resulting in generous rewards and ongoing growth potential based on your performance.

As a member of our Business Systems Development team, you will assist in the planning, programming, designing, testing and implementation of key business application enhancements for our AS/400 field systems. To qualify, you must be an ambitious self-starter with 3-6 years experience in application system development on AS/400 and/or System 38, with COBOL programming proficiency required. You will also need creative design capabilities, and strong estimating and communication skills. A B.S. degree in Computer Science, MIS or Business Administration is required as well.

In return for your talents and commitment, you will receive compensation commensurate with experience and outstanding fringe benefits including relocation assistance. For confidential consideration, please send resume with salary requirements to: **Human Resources Department - SWH1, Ryder System, Inc., 3600 N.W. 82nd Ave., Miami, FL 33166.**

Equal Opportunity Employer M/F/D
Drug testing is a condition of employment with Ryder.

RYDER

FIRMWARE DESIGN ENGINEER

As a firmware design engineer, you would design and maintain PASCAL, Z80 and Motorola 68000 assembler on state-of-the-art multi-host terminal workstations. The successful candidate will possess:

- B.S. in Electrical Engineering with M.S.E.E. a plus
- A minimum of 5 years experience in programming on terminal or workstation display devices
- Experience in designing data communication products with RS-232, IBM 3270, Ethernet
- Strong in PASCAL, Z80 assembler and 68000 assembler
- X-Window experience a plus

Excellent salary, medical, dental and disability benefits. Excellent vacation and incentive package. For consideration, please forward your resume to:

CW-88754
Computerworld, Box 9171
Framingham, MA 01701-9171

SYSTEMS ANALYST

Entergy Operations, Inc., the nuclear management subsidiary of Entergy Corporation, is seeking a systems analyst for its Grand Gulf Nuclear Station in Port Gibson, MS.

In this position you will develop and maintain project schedules, including determining project strategy, resources required, project tasks and phases and determination of project completion dates. In addition, you will maintain an active liaison with user personnel to ensure accuracy and responsiveness, translate business needs analyses into effective, workable computer solutions and provide Help Desk and Tool Kit technical support relating to PC's, LAN's, 3270 Gateways, RJE and other hardware and software issues.

Position requires a Bachelor's degree in Computer Science, Engineering, Engineering Technology, Physical Science, Mathematics or other related Technical field, and a minimum of 4 years experience. Experience with PC's, Novell LAN's, Toolkit (MS Windows, Excel, Word, Powerpoint, Freelance), CC-Mail, and other PC software is required. Experience with Attachmate 3270 Gateway, RJE, OS/JCL, TSO/ISPF, and other IBM hardware/software is desired.

Entergy offers competitive salaries, excellent benefits and a progressive work environment. Please submit resume with salary requirements to: **Jack Farren, Grand Gulf Nuclear Station, P.O. Box 756, Port Gibson, MS 39150.** EEO/AA/M/F/D/V

ENTERGY

Southeast

Computer Consulting Group, has immediate openings on its southeast consulting staff for talented Programmer/Analysts. We're especially seeking:

- **IMS or CICS or DB-2**
- **DB-2 CSP**
- **IMS APS**
- **INGRES/VMS**
- **ORACLE/UNIX**
- **KNOWLEDGEWARE/ ADW**
- **AS400/COBOL**

Computer Consulting Group

Contract Professional Services

4109 Wake Forest Rd
Suite 307
Raleigh, NC 27609
1-800-222-1273
FAX (803)738-9123
Member NACCB

Senior Software Analyst: Design and develop healthcare software products. Analyze project to produce design specifications. Apply entity relational model to define system and to identify data attributes and relational tables. Identify tasks to develop internal specifications. Carry out logic and data design and define program descriptions for database transactions. Create file/database definitions. Address system reliability and performance issues. Apply knowledge of UNIX, DOS operating systems, Novell Network, Ethernet LANs, TCP/IP/UDP/ARP/RARP protocols, Btrieve, Xtreve, Greenleaf Data Windows, X-Windows, PVCS, Brief, RTLINK, PMAKE, and C, Turbo C computer languages. Must have Master's in Computer Engineering and 1 yr exp in pos or 1 yr as Software Eng or Univ. Level Teaching/Laboratory Assistant in Computer Engineering. $40,000/yr, 40 hrs/wk, 9-5. Send resume to: Orlando Job Service Office, 3421 Lawton Road, Orlando, FL 32803. ATTN: J.O. # FL 0662531.

SUNBELT

Application Development
32 Needed NOW
Tampa Atlanta Charlotte

1	Micro Sys Dept Mgr	$55/70K
2	PICK OS Prog's	$25/35K
2	PICK OS P/A's	$35/45K
4	SYBASE Prog+PA's	$25/45K
1	SYBASE/R DBA	$55/70K
	Consultant Positions:	
1	DB2/DBA	$45/65K
3	CASE IEF/IEW P/A	$30/50K
2	Oracle P/A	$30/55K
2	Unix/C P/A	$30/50K
1	PeopleSoft HR	$35/55K
2	Walker AR/AP/GL	$35/55K
2	M&D GL/AP/HR	$30/55K
4	BPCS/AS400	$30/50K
2	Software 2000	$30/50K
3	JD Edwards	$30/50K

RUSH resume to: DCT INC, PO Box 842, Indian Rocks Beach, Florida 34635-0842

PROGRAMMER ANALYST: Converts data from project specifications to design and develop software systems designed for headquarters and company's restaurants. Primary purpose of software systems designed for headquarters will include coordinating finances, employment structures and organization details of the company's restaurants. Responsible for consulting with managers within corporation to review and evaluate their operations and provide systems and design advice which will be implemented for the purpose of enhancing the efficiency of their systems. Masters Degree in Computer Science. Must have knowledge of Pascal, computer graphics, LOGO, computer design skills. 40 hpw; 9am-5pm; $26,175/yr. Send resume to Mike Daniel, Job Serv Pro & Tech Supp, TN Dept. of Employment Sec., Nashville, TN 37245-1200, JOTN1402826, Job Location: Nashville, TN.

Results.

Computerworld gives recruitment advertisers results. Weekly. Regionally. And Nationally.

To place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

Weekly. Regional. National. And it works.

An IDG Communications Publication

Our Technology Defines the Future

We Trust You'll Agree

National Computer Systems defines the worldwide standard for automated information systems in the trust and financial services industry. ULTRUST™, our newest product innovation designed for the layered, highly sophisticated trust marketplace, has already achieved widespread acclaim. Based on M technology, ULTRUST™ architecture boasts a proprietary user interface, high performance transaction processing, and object-oriented design techniques. At NCS our technology and application are positioned for global expansion. Are you?

Technical Architect

Provide advice and consultation to development staff in the creation of major trust systems software products. Monitor software life cycle ensuring technical integrity of systems architecture and product direction. Review and evaluate functional specifications and written code with respect to design standards, performance, support and maintainability. Identify, analyze, and introduce new methods, structures and technologies into environment and products as appropriate. A minimum of 8 years software development experience within a banking, securities or financial services environment along with a BS in computer science or equivalent. MS preferred.

Programmer Analysts

You will design, write, test, implement and maintain financial applications software. Interact with business analysts to assess user needs and create technical design specifications based on functional criteria. You must have a minimum of 2 years experience utilizing financial concepts in applications software development and a BS in Information Systems or equivalent. Experience with MUMPS or similar 3GL language and VAX/VMS is desired along with strong communications skills.

Conversion Analysts

We seek self starters with excellent analytical, communication and organizational skills to analyze customer needs and define methods for programming, designing and writing conversion specifications. A minimum of 3 years' financial applications programming experience along with a BS in information systems or equivalent is preferred. VAX/VMS and MUMPS a plus. Some travel is required.

QA Specialists

Test financial application software to meet functional design specifications. Work closely with programmers, design analysts and provide support to in-house staff and customers. Requires detail-oriented individuals with strong analytical and communication skills. Minimum of 2 years' experience in the financial industry and a Bachelor's degree in computer science, finance or equivalent. Experience in software development testing environment is a plus. Multiple positions exist ranging from associate to senior level.

Systems Programmer/Analysts

You will analyze, design and develop systems software to interface our financial applications to VAX/VMS working from functional requirements. You will also assist with the integration of third-party hardware and software. You must possess a minimum of 2 years experience with VAX/VMS internals, security, system services and utilities. A BS degree or equivalent, and knowledge of DCL, C and CMS is required. Familiarity with installation kit creation, Pascal, SMG and MUMPS would be helpful.

At NCS you'll enjoy an environment that tests your inventiveness creating an atmosphere for achievement. We offer competitive salaries and benefits. If interested, please forward your resume to: Employment, National Computer Services, Financial Systems Division, One Memorial Drive, Cambridge, MA 02142. An equal opportunity employer.

CONTACT US ON-LINE

No resumes necessary! Use your PC and modem to apply for a position and/or find out more about us. Dial (603) 432-2742, press return twice and enter the password "TRUST" (1200/2400 baud).

NATIONAL COMPUTER SYSTEMS NCS™

Looking for qualified computer professionals?

Look no further. More than 629,000 computer professionals read *Computerworld* every week. And you can reach all of them -- or just the ones in your region -- with a regional or national recruitment advertisement in *Computerworld's Computer Careers* section.

For more information, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700); or call your local sales office listed below:

BOSTON: 375 Cachituate Raad, Box 9171, Framingham, MA 01701-9171, Nancy Percival, 508-879-0700

NEW YORK: Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662, Valerie Galbo, 201-587-0090

WASHINGTON, D.C.: 8304 Professional Hill Drive, Fairfax, VA 22031, Katie Kress, 703-573-4115

CHICAGO: 10400 West Higgins Road, Suite 300, Rose mont, IL 60018, Patricia Powers, 708-827-4433

LOS ANGELES: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714, Barbara Murphy, 714-250-0164

SAN FRANCISCO: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714, Barbara Murphy, 714-250-0164.

COMPUTERWORLD
Where the qualified candidates look. Every week.

DP OPPORTUNITIES

S/A IBM M/F RETAIL EXP	$45K
DBA IDMS MANU EXP	$50K
P/A DATAPOINT DATABUS	$33K
S/A DB2 CICS COBOL	$52K
P/A APS DB2 COBOL CICS	$42K
MGR AS/400 EDI EXP	$65K
P/A AS400 MAPICS	$55K
P/A IDMS/ADSO	$38K
P/A COBOL CICS MVS	$39K
SR DATA COMM ANALYST VTAM/NCP NETVIEW MVS	$40K
P/A (9) SYBERTEK COBOL CICS	$40K

CONTRACTOR NEEDS
INGRES * C++ * UNIFACE * ADABAS/NATURAL * APS/DB2

AMERICAN PERSONNEL, INC.
P.O. BOX 667386, CHARLOTTE, NC 28266-7386
(704) 398-1899

OPPORTUNITY

Leader in software services is expanding operations in North and South Carolina. Needs exist for both fulltime and contract personnel. Excellent salary and benefits package including relocation assistance. Requires aggressive, self motivated candidates with 2 or more years expenence in any of the following:

- COBOL II, CICS
- IMS DB/DC
- APS, DB2 or CICS
- EDI, Manuf.
- SYSTEMATICS
- OS/2, Windows
- DB2, CSP
- IDMS/ADSO, CAS
- ADABAS/NATURAL 2.2
- HOGAN
- MIcroFOCUS
- TERADATA

Send resume in confidence to:

SOFTWARE Data Services, Inc.
4600 Park Road, Suite 300, Charlotte, NC 28209
1-800-521-8077

Senior Applications Specialist (2 positions). Requires 5 yrs.' exp. in applications design & development & technical support of System Builder utility, including design & support of SB+. In lieu of 5 yrs.' exp., will accept 4 yrs.' stated exp. & bachelor's degree with specialization in information-related field. Also requires in-depth knowledge of PICK operating system & databases & of PICK-like data bases on other operating systems, as well as familiarity with UNIX, Universe & Unidata. At senior level, design, develop & provide technical support for applications on the complex System Builder & SB+ utilities. Consult to users regarding implementation, conversion & optimization of their applications. Resolve problems arising from operations, including Unidata & Universe operating command issues. Develop new System Builder & SB+ applications for PICK-like databases on other operating systems, with particular emphasis on UNIX. Extensive travel in U.S. required. 40 hrs./wk. 9-5. Salary range $38,000-$42,000 per yr., dep. on educ. & exp. Apply in person or send resume to Georgia Dept. of Labor, J.O. #GA 5564742, 2972 Ask-Kay Dr., Smyma, GA 30082, or to the nearest Georgia Job Service Center.

Dealer Services Applications Specialist (2 positions). Requires 2 yrs' exp. in the applications design & development & technical support of System Builder utility, including design & support of SB+. In lieu of 2 yrs.' exp., will accept 1 yr. stated exp. & bachelor's degree with specialization in information-related field. Also requires in-depth knowledge of PICK operating system & databases & of PICK-like databases on other operating systems, as well as familiarity with UNIX & Data Basic. Design, develop & provide technical support for applications on the complex System Builder & SB+ utilities. Liaise, regarding technical issues, with the more than 100 dealers & sub-dealers. Design new System Builder & SB+ applications for PICK-like databases on other operating systems, with particular emphasis on UNIX. Convert applications to other systems, utilizing Data Basic. Extensive travel in U.S. required. 40 hrs./wk., 9-5. Salary range $33,000 - $37,000/yr., dep. on educ. & exp. Apply in person or send resume to Georgia Dept. of Labor, J.O. # GA 5565917, 2972 Ask-Kay Dr., Smyma, GA 30082 or to the nearest Georgia Job Service Center.

PROGRAMMER/ ANALYST POSITIONS

SYSTEMS PROGRAMMERS

With at least 3 years experience in

- IMS DB/DC, DL1
- CICS
- NATURAL
- ADABASE
- PL1
- COBOL
- DB2/SQL
- TANDEM
- VM/MVS
- RPGII/III
- VAX/VMS
- IDMS/ADS/O
- FOCUS
- C LANGUAGE

Please Send Resume to:

MSI **Management Solutions, Inc.**
1416 South Third Street, Louisville, KY 40208
502-634-1387

Banking Specialists

LEXIS Resources, Inc., one of the premier technical support firms in the Southeast, is seeking experienced programmer/ analysts for long term assignments in Columbia, S.C. Required skills include: CICS, IMS, COBOL, with any combination of ATM, deposit, installment/commercial loans, or other banking software. Lexis offers very competitive salaries, full benefits, and career growth paths. For immediate consideration, please fax or mail your resume to:

LEXIS Resources, Inc.
1611 Hampton Street
Columbia, South Carolina 29201
Fax: (803) 252-5827 EOE

NEW CAREERS

SYBASE/UNIX PLATFORM	$60K
AS400/RPG3/SYNON	$50s

Jersey City • 201 761 4400
658 Ridgewood Rd Mpld NJ 07040

ASI Amsoft SA	To $50K
NCP VTAM Sys Prog	To $50K

Greensboro NC • 919 373 1461
P O Box 14548 27415

STRATUS/VOS multi pos	To $65K
AS/400 P As Sr P As	To $50K

Lexington MA • 617 861 1020
P O Box 636 02173

National Computer Associates

SOFTWARE ENGINEER/DEVELOPER - Design & develop software systems constituting a uniform user interface & archive system with Product Structure Model based on DB2 & Oracle for large database application system/system integration on IBM mainframe systems which include operating systems: MVS, Unix (UTS); environment: ISPF/PDF; & languages; mainframe C, Assembler & Fortran. Engaged in whole life cycle of software product. Minimum reqs.: Masters degree in Manufacturing Engineering or Computer Science, & 5 yrs exp., including 1 yr with IBM systems with OS/2, PC to mainframe connection; $56,000/yr salary. Please apply by sending resume to: Ms. Pat Ganno, Job Order No. 0653664, Job Service of Florida, PO Box C, Clearwater, FL 34618-4090.

Recruit The Best!

Place your od in regional or national editions of Computerworld's Computer Careers section. For more information, call Lisa McGrath.

800-343-6474
(in MA, 508-879-0700)

PROGRAMMERS
SOFTWARE ENGINEERS
Permanent and contract positions.
AS400/RPGIII
ORACLE
'C', PL/M - R/T
TANDEM
COBOL/CICS
Please send Resume to:
Gateway Resources, Inc.
Paul Topolosky, President
1050 Saxonburg Blvd.
Glenshaw, PA 15116
(412) 487-4660
FAX (412) 487-6989

Your Career is Calling You.

Benson, Douglas & Associates, Inc. is one of the fastest growing Systems Integration and Consulting firms in the country. *Systems & Network Integration* magazine named us one of the top "25 Companies to Watch" in their 1992 Top 50 Systems Integrators Edition. BD&A delivers projects nationwide, offering career growth and outstanding benefits. A sampling of our current requirements:

HP9000	HP-UX, X-WINDOWS, C, KERNAL, OPENVIEW
HP3000	POWERHOUSE, PROTOS, MM, PM
IBM	DB2, ACA, CSP, HOGAN, CICS, IMS, IDMS, NOMAD, SAS, TELON, IDEAL, DATACOM, AS/400, RPG
VAX	Fortran, NETWORKING, COBOL, All 4GLs, C, ADA
RDBs	ORACLE, SYBASE, INFORMIX, INGRES, UNIFACE, DataModeling
UNIX/C	CL/Server, CASETOOLS

Sequent, Unix, KERNAL, WINDOWS, C++, DBAs, System Administrators

Answer the call. Call, mail or fax your resume to: (ref.CW0892)
Benson, Douglas & Associates, Inc.
113 Edinburgh S. #104 Cary, NC 27511
An Equal Opportunity Employer
919-467-3357 800-525-2927 FAX 919-467-7688

Discovering a winning formula is one thing.

Repeating it is something else.

Record growth and recognition are hallmarks of The Vanguard Group of Investment Companies—the largest mutual fund complex in the world. Named the best provider of "elite" service in the industry for the third year in a row, Vanguard offers today's professionals an incomparable environment in which to prosper and grow.

EXPERIENCED SOFTWARE ENGINEERS
Presently we are seeking high-energy, creative, "roll up your sleeves" individuals responsible for the design and implementation of Client Server applications. Candidates must possess the ability to apply an "Architectural Design Approach" to multi-platform applications. "C", SQL Server, APPC, Named Pipes, NetBios, and OS/2 are highly preferred. Object Oriented Design, "C++" and/or Smalltalk/V PM are a plus.

Vanguard offers the salary and flexible benefits you would expect from a world leader in its field —tuition reimbursement, 401(k), profit sharing and retirement plans. Take the first step to an outstanding career by sending your resume to: **The Vanguard Group, Inc., Dept. RF/SE/CW, P.O. Box 876, Valley Forge, PA 19482. Fax: (215) 669-6640.** *Equal Opportunity Employer. Drug-free/smoke-free workplace. Drug Screening Employer. Minorities, Disabled, and Veterans encouraged to apply.*

THE Vanguard GROUP OF INVESTMENT COMPANIES

IS Program Manager

A prominent IS management consulting firm is seeking an individual to manage its ongoing series of IS professional development audioconferences. Duties will include selection of conference topics, acquisition of guest speakers, coordination of production and administration, preparation and placement of articles, and marketing of this service.

Suitable candidates should have 2-3 years of IS experience, preferably in a corporate setting. Excellent writing and communications skills. Bachelor's degree in Business or Computer Science. Account management experience preferred.

This exciting position affords the right candidate an opportunity to be at the forefront of today's critical IS issues. Send your resume and writing sample to NDMA Inc., 641 Danbury Rd, Suite D, Ridgefield, CT 06877.

Programmer Analyst

The Corporate Information Service Department of a major health care provider in Northwestern Ohio currently has a full-time opportunity available. Applicants must have a computer science/MIS degree from an accredited educational institution and a minimum of two years of programming experience on an IBM AS400 (or System 38) using RPG III. Familiarity with the programming needs of a health care environment is a plus. Salary to mid 30's based on experience and an excellent flexible benefits package. Relocation assistance available.

Respond to: Employment Manager
2600 Navarre Avenue
Oregon, OH 43616

THERE'S, Strength IN NUMBERS

...and the numbers of LEGENT Corporation, the dynamic software and services giant, speak volumes. We employ over 2,000 people in 19 domestic regional offices and 14 foreign offices. Founded in March 1989, LEGENT had an explosive 25% growth rate in 1991 with an annual revenue in excess of $200 million. More than 130 products have been developed, serving more than 10,000 customer sites in 35 countries. Consider the following opportunities with our Data Center Team within our **suburban Pittsburgh, PA location:**

Data Center Supervisor

This strong team player must have experience with Data Center Operations, continuous operations and availability; MVS, VM and VSE operations; and 3-5 years management and equipment installation planning. Experience with LEGENT system software products and excellent verbal and written communication skills are required. Knowledge of UNIX, DEC and Sequent is a definite plus.

Hardware Specialist

The successful applicant must have experience with CAD/CAM; hardware installation planning software packages; hardware, environmental, power and cabling issues in a large IBM Space PCM Environment; as well as good verbal and written communication skills. FEP, LAN, Network Topology and Spreadsheet experience is a plus.

Operations Analyst

The qualified candidate must have experience and knowledge of software computer scheduling packages, LEGENT AOS and AOM System Software Products, IBM OS/MVS/JCL and utilities, including Production Data Center experience. Strong customer service orientation skills, and good verbal and written skills required. Experience with PC spreadsheets is a plus.

LEGENT offers a competitive salary and benefits package. Interested and qualified individuals, please forward resume and salary history to: LEGENT Corporation, Attn: Human Resources C/F, Two Allegheny Center, Pittsburgh, PA 15212. We are proud to be an Equal Opportunity Employer. M/F/H/V

LEGENT

CTG is where you want to be

At CTG, the atmosphere is charged with challenge and excitement as we develop quality based breakthrough solutions into the 90's.

Our talented team members are supported by innovative career management system (CMS490) which offers:

- Comprehensive compensation
- Full feature benefits
- Educational opportunities

Second to none is CTG's IQ (Innovations in Quality) program providing the staff member the opportunity to be with a firm that is globally competitive.

CTG is making an impact in the global marketplace by experiencing phenomenal success, therefore creating a diverse array of career opportunities for knowledgeable professionals.

Current opportunities exist for those experienced in the following areas:

Oracle SQL	IDMS/ADSO	CICS
IMS DB/DC	MICRO FOCUS COBOL	AIX
DB2	Information Engineering	CSP
C/UNIX Windows	AS/400 RPG	ADABAS/NATURAL
	Mac Development	

Those wanting to make an impact on their career should send a resume to:

Southeast Region Recruiting Manager
Department CW 8/92
100 Colony Square Suite 1900
Atlanta, GA 30361
FAX (404) 870-1555

Midwest Region Recruiting Manager
Department CW 700/92
8044 Montgomery Rd Suite 200
Cincinnati, OH 45236
FAX (513) 793-6793

Make voice mail contact:

1-800-992-5350
Box 7859

1-800-992-5350
Box 7739

PERMANENT/ CONSULTING

Pittsburgh Opportunities!

- OS/COBOL
- ASSEMBLER
- IMS DB/DC
- IMS/DBA
- VAX/COBOL
- ULTRA
- MS/BASIC
- TANDEM/TAL
- 4TH DATABASE
- APS
- CICS
- VSAM
- DB2/DBA
- MANTIS
- SYBASE
- C, C++
- NOVELL
- HOGAN

NORTHEASTERN EXEC GROUP, INC.
Box 23412
Pittsburgh, PA 15222

PAYROLL/PERSONNEL IMPLEMENTATION CONSULTANT

CITY OF SACRAMENTO RFQ

The City of Sacramento seeks a qualified consultant with payroll implementation experience. Minimum qualifications, 5 years of payroll/personnel system implementation experience with a large mainframe data base and DB2

Send statement of qualifications, maximum five pages, including total years of relevant experience, payroll/personnel system implementation experience, client references, vendor software implemented, implementation time, level of customization and a profile of the organization served ie number of employees, number of checks/pay period

Send consultant qualifications to Screening Committee - HRD, Program Consultant, Department of Finance, Room 100, City of Sacramento, 915 I Street, Sacramento, CA 95814. Attn: Betty Masuoka. Closing date Sept. 18, 1992

FLORIDA
PROFESSIONAL CAREERS

Immediate permanent and consulting opportunities for professionals with any one of the following skills:

SKILL	SALARY TO	SKILL	SALARY TO
UNIX/C	45K	IEF/IEW	45K
X-WINDOWS/GUI	42K	IDMS/ADSO	39K
DB2/SQL	45K	HP 3000	35K
CICS/COBOL	39K	INFORMIX	42K
FOCUS	45K	ORACLE	48K
AS 400/RPG III	45K	VAX	40K
TANDEM/TAL/C	65K	ADABASE/NATURAL	42K
IMS DB/DC	42K	PACBASE	45K

COMPUTERPEOPLE, Dept. 525

3265 Meridian Parkway, Suite 122, Ft. Lauderdale, FL 33331, 305-384-0999, 1-800-777-8603, "Serving South Florida & Jacksonville"

12225 28th St. N, St. Petersburg, FL 33716, 813-573-2626, 1-800-329-2626, "Serving the Tampa Bay area"

20 North Orange Ave., Suite 1400, Orlando, FL 32801, 1-800-299-9953, Fax 843-8153, "Serving the Orlando area"

COMPUTERPEOPLE

Team is a software professional services firm built by software professionals. We are one of the fastest growing firms in the South. If you want career growth, job challenge and have experience listed, call Matt

Florida	Georgia	Carolina's
Windows	HP3000	Oracle 6.0
Pascal	Clipper	SQL
Interleaf/lisp	AS/400	Unix
SQL		
Tandem		
Oracle 6.0		
SunSparc		

TEAM
P.O. Box 952333
Lake Mary, FL 32746
407/324-5111 407/323-9933 (fax)
Member NACCB

CPU FLORIDA

CONSULTING OPPORTUNITIES

- 370 ASSEMBLER/AFP
- AIX/C/370 ASSEMBLER
- UNIX/C/370 ASSEMBLER
- 370 ASSEMBLER/GRAPHICS
- UNIX/C-COMMUNICATIONS
- DATAVIEW PRODUCTS
- TESSERACT PAYROLL
- DB2/IMS DB/DC
- VAX/VMS/COBOL
- Ada/UNIX/2167
- ORACLE/VMS or UNIX

Fax Resume To:
813/281-0222
or call Ext. 10

800-749-0456

ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

A late advertising close means you get quick response. Computerworld needs just 2 working days notice for your ad to appear in the next weekly issue!

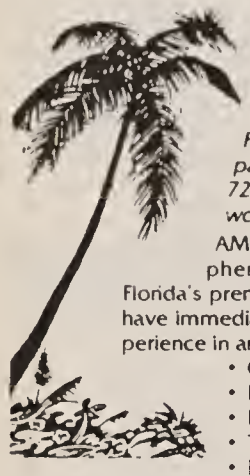
In fact, when we receive your materials or faxed copy for your ad by 3 p.m. the Thursday before the Monday issue date, your ad will appear that Monday!* (Space reservations closing date is the same time the previous day).

Mon	Tue	Wed	Thu	Fri
			Space & Materials Close 1	2
Issue Date				

* Holiday closings may vary. Please call for details.

To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at **800/343-6474 (in MA, 508/879-0700).**

COMPUTERWORLD
Where the qualified candidates look. Every week.



Florida
DON'T DREAM THE LIFE, LIVE THE DREAM!!!

Florida, with gentle winds bending the palms and an average temperature of 72°, is one of the finest places to live and work.

AMD Consulting Services is expenencing phenomenal growth. Our customers, Florida's premier information processing centers, have immediate needs for professionals with experience in any of the following:

- COBOL, PLI, ALC, RPG3, "C", CICS
- FOCUS, ORACLE, INFORMIX
- DB2/SQL, IDMS, M204, IMS
- TANDEM COBOL, TAL, PATHWAY
- DEC/VAX, UNIX, AIX, OS2, PICK
- PAC BASE, MCCORMACK & DODGE

It's your move, make it the RIGHT ONE.

AMD CONSULTING SERVICES
120 West Hyde Park Place, Suite 200C, Tampa, Florida 33606, (813) 229-9208

SYSTEMS PROGRAMMER I

BS Degree in Computer Science or related field, or equivalent in education & exp. Requires 3-5 yrs. exp. in systems programming supporting an MVS/XA JES2 environment; installation & maintenance of OEM products & system software utilizing SMP/E, thorough knowledge of MVS operating system concepts, MVS utilities, & JCL. CICS, IMS, VTAM & NCP exp. a plus. For more information, call Ann collect at 808-547-4703 or send resume & salary req. to:

Queen's Medical Center
1301 Punchbowl Street
Honolulu, Hawaii 96813
EOE

Software Engineer for NW Ohio medical education & research facility to plan, design & develop software for image processing & object recognition research & imaging related to the application of Industrial Computerized Tomography scanning & Medical Resonance Imaging in non-destructive testing based on neural networks, blackboard & Common Lisp Object Systems, advanced mathematics req. to describe image transform operations, algorithms & 3-dimensional computer graphic rendering techniques utilizing Macros & Unix machines & programs in C & Lisp languages. No exp. req. in above duties. Applicants will qualify with 1 yr. exp. as a Systems Analyst & a Bachelor's degree in Computer Science, Mathematics or Computer Engineering (must have taken a course in mathematical logic). Must have completed a course in blackboard systems, Common Lisp Object Systems, & Neural Network Architecture for Artificial Intelligence. M-F, 8AM-5PM, $30,590/yr. Must have proof of legal authority to work permanently in the U.S.A. Send resumes in **duplicate** (NO CALLS) to J. Davies, JO#1333832, Ohio Bureau of Employment Services, PO Box 1618, Columbus, OH 43216.

CONTRACT POSITIONS

Beau has contract positions open in the following areas:

- **SYBASE**
- **POWERBUILDER**
- **AIX/RSC6000**
- **ADABAS/NATURAL**
- **ORACLE**

Send resume to:

BEAU, INC.
Data Processing Consultants
P.O. Box 23
Chanhassen, MN 55317
612-934-4727
EEO/AA

SOFTWARE ENGINEER - 40 hrs./wk., 8am-5pm, $40,000.00 per yr. To analyze, design, develop and carry out quality assurance of communications and support of general utility software applications systems. Requires Bachelor's degree in Computer Science, Statistics, Physics, Math or Engineering, 2 years experience in job offered or 2 years experience as Systems Analyst. Must have experience with AS/400, OS/400, RPG/400, CL400, SQL and Communications Protocols. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 53592.

Results.

Computerworld gives recruitment advertisers results. Weekly. Regionally. And Nationally.

To place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

Weekly. Regional. National. And it works.

An IDG Communications Publication

DIRECTOR, COMPUTING SERVICES
Monterey Peninsula College

Salary: $4,411 - $5,364/month + benefits (family medical, dental; employee vision, life, LTD). Manage the overall computing information services of the college.

Minimum Qualifications: B.A. degree in management, information systems, computer science, business administration, or a related field, including training in data processing + 4 years responsible experience supervising and managing an information systems environment.

For required application materials contact: MPC Human Resources, 980 Fremont, Monterey, CA 93940. PHONE: (408) 646-4016, FAX (408) 655-2627. Deadline for receipt of applications: Sept. 18, 1992 at 5:00 pm. AA/EOE

MPC **MONTEREY PENINSULA COLLEGE**
Monterey, California

COMPUTER PROFESSIONALS
Northern California

DB2 Sys. Prog./DBA
IDMS Systems Programmer
CICS Systems Programmer
Sys. Software Developers
Systems Engineer
VTAM & TCP/IP
Data Security Analyst
DASD Analyst

QUANTUM SEARCH
P.O. Box 189279
Sacramento, CA 95818
FAX: (916) 454-9350

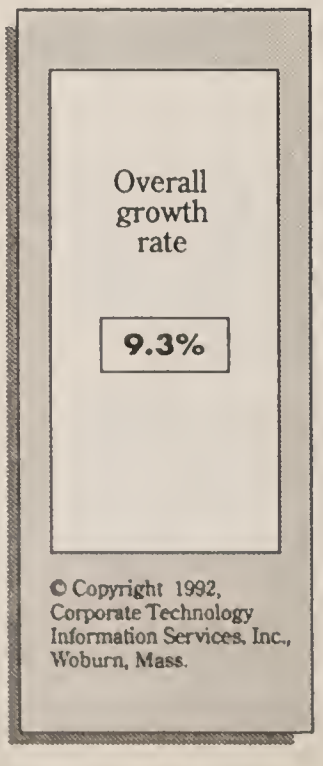
THIS SPACE FOR HIRE

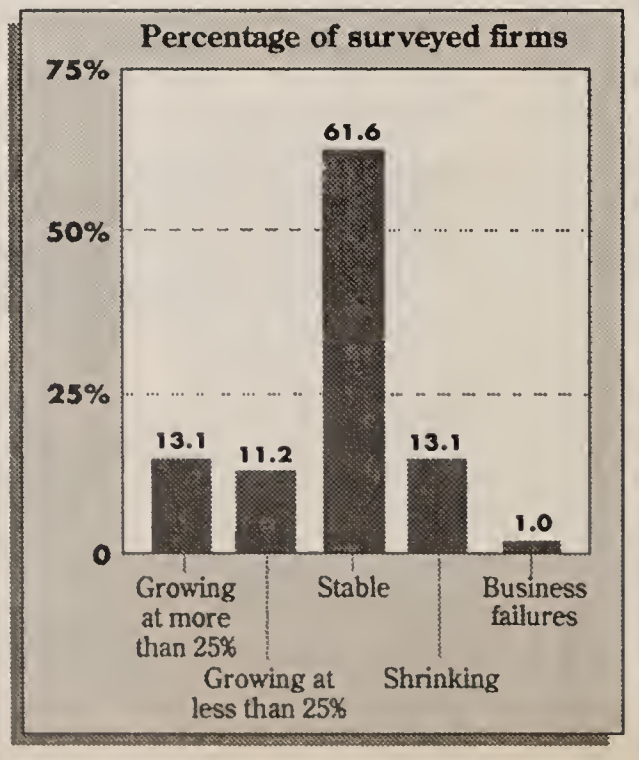
Call today to place your recruitment ad.

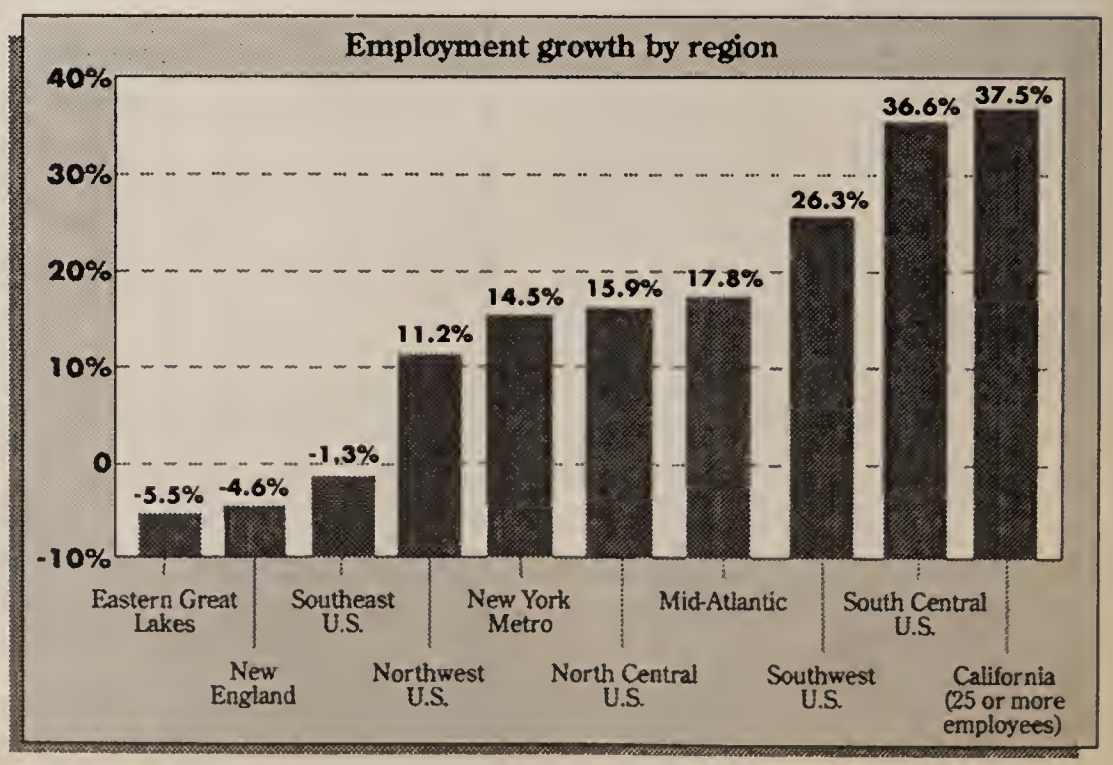
800-343-6474
(in MA, 508/879-0700)

Computerworld/Corptech Career Index

Insurance software: Every region with an increase in employment during the past year saw it in the double-digit range.







Disney

The Walt Disney Company has immediate openings within the Information Processing & Networking Services Division for experienced data processing professionals who preferably have a bachelor's degree in a related field. These positions are based in our Worldwide Data Center located in Lake Buena Vista, Florida.

Automated Technical Programmer (SAS)

Develop management reports from SAS based billing and capacity planning systems. Develop reports pertinent to hardware utilization, manpower, and physical plant requirements.

Skills Required: A minimum of four years experience with SAS in a multi-platform environment; previous experience in developing capacity and performance utilization reports; experience producing graphic reports using IBM/SAS tools; ability to work in a high pressure environment with tight time frames; experience with MICS a plus.

Quality Assurance Analyst Senior & Quality Assurance Analyst

Develop and implement quality assurance related policies, standards, and procedures; negotiate differences from standards found in system reviews; perform formal and informal system reviews throughout development life cycle to ascertain quality and adherence to standards.

Skills Required: Six to eight years senior experience for the QAA Senior position, four to six years experience for the QAA position. Experience with MVS regression/stress testing tools, VTAM and CICS, and strong JCL skills in a large mainframe environment. Previous exposure to operating systems and database management tools; ability to communicate effectively; ability to work in a high pressure environment with tight time frames.

Data Base Analyst

Work with user group data specialists to evaluate database technologies; recommend optimal technologies for performance; analyze database performance to segregate structural database problems; provide back-up support for all DB2 projects and recovery for data on all storage media for data utility group; provide tape volume requirements for applications.

Skills Required: Four to six years progressive information systems experience; applied knowledge of DB2, DL1; prior direct experience with very large-scale databases; working knowledge of DB2 performance analysis tool/utilities. i.e. Insight DB2, DB2/PM.

Implementation Analyst

Interact with various operation groups for functions related to systems implementation support; perform systems implementation support functions to include assisting in setting schedules for moving applications into production, reviewing application deliverable from application teams, and enforcing established standards and procedures; build librarian chains and oversee library creation and librarian authorities; track implementation of new applications and identifies problems and conflicts.

Skills Required: Three to five years progressive systems experience; a minimum of two years experience in an IBM mainframe environment; experience with CA-LIBRARIAN/CCF, JCLCHECK, SAR, INFOPAC, HYPER Channel, and APCDOC; experience with PANVELET and/or ENDEVOR a plus; previous exposure to operating systems and database management tools; ability to communicate effectively.

Systems Programming Manager

Manage technical personnel in providing technical support for the operating systems, communication and utility applications of an MVS/ESA environment; provide primary support to the systems programming team. Assess technical capabilities and limitations of programming languages, operating systems and communication protocols.

Skills Required: Strong written and verbal communication skills. A bachelor's degree and a minimum of ten years experience in applied tech support of IBM 3090's, Stratus, and AS/400's is desired.

We offer a "World" of exciting advancement opportunities, a competitive salary and an exceptional benefit/relocation package.

If you would like to become "part of the Magic of the Walt Disney Company," please send your resume with salary history in confidence to:

Walt Disney World Co.
Professional Staffing (JB-TG-10)
P.O. Box 10,090
Lake Buena Vista, FL 32830

An Equal Opportunity Employer

© The Walt Disney Co.

Walt Disney World Co.
An Equal Opportunity Employer

PROFESSIONAL CAREER OPPORTUNITIES WITH THE PREMIER NATIONAL SYSTEMS INTEGRATOR

Evernet Systems, Inc. is a rapidly growing nationwide systems integration firm. Evernet offers expertise in all aspects of network computing, ranging from GUI and applications development to database management design to interoperable systems architecture and installation, including connectivity and integration of minicomputer and mainframe systems. Due to expanded opportunities, the New York office is looking for the following individuals. Regional offices are also considering applicants for these and other positions. Salary and compensation package will be commensurate with experience.

Network Management Consultant

Candidate will collect user requirements and architect enterprise solutions. Preferred protocol experience is SNMP, with experience in specific platforms (e.g. HP OpenView™) a definite plus. The applicant should have development experience (C or C++) and have strong written and oral communication skill sets.

Multimedia Consultant

Ideal candidate should have development and implementation experience with various media types (imaging, video, voice, etc.), and understand the network requirements (configuration, compression schemes, etc.) that the technology demands. The candidate should have working experience with relational/OO database technology as it relates to image and voice information handling.

UNIX Applications Development Director

Candidate should have a proven track record in developing state-of-the-art UNIX, relational database related business applications. The position requires both technical savvy and managerial skill sets. This individual should be able to interface with Fortune 500 clients and produce a functional business requirement document. Candidate should possess C++ and/or object oriented development skills.

Network Consultant

Candidate will collect user requirements, architect enterprise network solutions, and assist with network implementations. Design and implementation experience with the TPC/IP, SPX/IPX, DECnet, AppleTalk, NETBIOS, LU 6.2, bridging, and routing protocols is required. Experience with NetWare, LAN Manager, UNIX, SNMP based management systems and transmission equipment a is plus. The applicant should have LAN/WAN design experience and have strong written and oral communication skill sets.

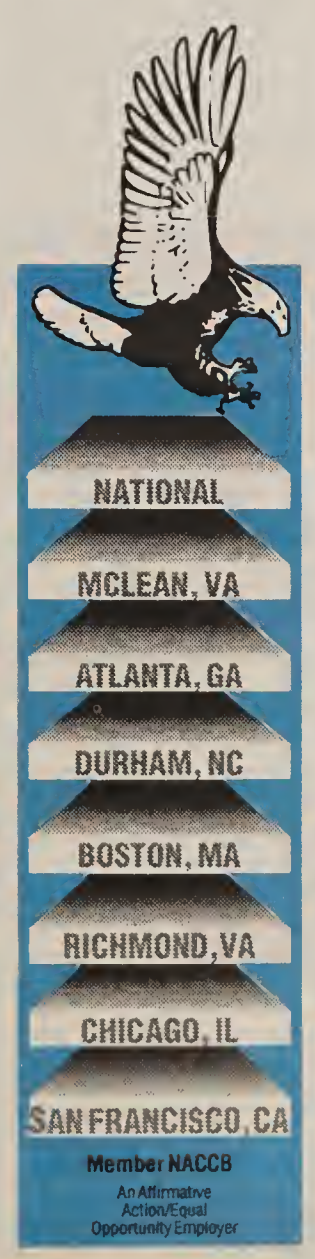
Project Manager

Ideal candidate should be thoroughly versed in full systems life cycle, project management techniques, and software tools. Experience required with preparing project plans, managing multiple projects simultaneously, and controlling costs. The applicant must also possess strong interpersonal, written, and presentation skill sets. The position requires a technical understanding of LAN/WAN networks, client/server architecture, and system management. Experience in developing implementation plans, project schedule, and cost control mechanisms is required.

For immediate consideration, send or fax a resume and cover letter with salary and experience history to:

EVERNET

Evernet Systems/
Human Resource Director
1633 Broadway, 41st floor
New York, NY 10019
Fax: (212) 767-4891



SOFTWARE CONSULTANTS

We're The Registry a dynamic, rapidly growing Software Consulting Company with unique and highly challenging assignments for both Software Engineers and MIS programmers at all levels of experience.

NATIONAL
VAX/ORACLE - ALL LEVELS, LONG TERM
IDMS / ADSO
OS-2 / PM / C
ANALYST - 1032/ INVENTORY CONTROL
Contact: Sue
(800) 248-9119
FAX: (617) 237-0723

MCLEAN, VA
ADA
UNIX, C
SYBASE
MUNPS
DEC mcc
ORACLE
Contact: Bill
(800) 367-9119
FAX: (703) 790-8467

ATLANTA, GA
IBM/ASM/CICS
MS-WINDOWS/SDK
SYBASE / DBA
LBMS CASE OR IEW
PROGRESS
D&B H.R. / DB2
Contact: Jeff
(800) 255-9119
FAX: (404) 257-0566

DURHAM, NC
INFORMIX 4GL
DB2 CSP
DB2 DBA
DB2 CICS COBOL
ORACLE X-WINDOWS
GUPTA SQL WINDOWS
Contact: Chris Blair
(800) 338-9119
FAX: (919) 544-9668

BOSTON, MA
POWERBUILDER
VISUAL / BASIC
SQL / SERVER
SYBASE
AS400 / RPG III
DB2 DATA MODELING
Contact: Meredith
(800) 248-9119
FAX: (617) 237-0723

CHICAGO, IL
PACBASE
POWERBUILDER
SAS
DEC / VAX
UNIX C
SYBASE
Contact: Chris
(800) 677-9119
FAX: (312) 558-1388

RICHMOND, VA
IMS DB / DC
DB2 / APS
ORACLE/FORMS 3.0
X-WINDOWS/MOTIF
DASD / SMS
VMS / DEC FORMS
Contact: Susan
(804) 747-1000
FAX: (804) 346-0510

SAN FRANCISCO, CA
ORACLE/FORMS 2.3
OS2 / PM / C
ACMS / RDB / COBOL
MS-WINDOWS/DEV
SYBASE
X-WINDOWS/MOTIF
Contact: Mike
(800) 248-9119
FAX: (617) 237-0723

The Registry

We'll Circulate Your Resume. Widely. Effectively. Discreetly. Free!

The CLEARINGHOUSE fills employer needs nationwide for computer professionals. If you're experienced in any of the fields below, you should be associated with us.

Senior Programmers ▪ Systems Analysts
Programmer/Analysts ▪ Technical Writers
Project/Team Leaders ▪ MIS Directors ▪ DBA's

LAN	HP	ADA	RPG III	IMS DB/DC
C, C++	AIX	UNIX	HOGAN	CASE TOOLS
FOCUS	AS 400	DEC/VMS	IBM/MVS	IBM Mainframe
SYBASE	ORACLE	INFORMIX	OSF/MOTIF	J. D. EDWARDS
INGRES	X-WINDOWS	IDMS/ADSO	CICS/VSAM	OPEN SYSTEMS
DB2/COBOL				ADABAS/NATURAL

Mail or fax your resume to:

CLEARING HOUSE
FOR COMPUTER PROFESSIONALS
Department CW1 P O. Box 3668, Orlando, Florida 32802. FAX 407/333-2048

In search of better phone support

BY ALICE LAPLANTE
SPECIAL TO CW

Raymond Geitka had a simple question: Was the latest version of Textra, the standard personal computer-based word processor being used at his organization, available in a network version?

One day and seven long-distance phone calls to various parts of the country later, he got his answer — but not from Santa Monica, Calif.-based Peter Norton Computing, Inc., the company that sold him the package. "I just got bounced from one person to another," says Geitka, director of computing services at the University of Michigan in Dearborn.

The road to getting answers to software and hardware questions over the phone is all too often just as long and winding as Geitka's.

You can take the time to establish strong phone support from your vendor, but on the whole, information systems workers say it's not uncommon to suffer long waits on telephone hold, "not-my-department" brush-offs or — the worst — incorrect answers from technically inept people.

A survey by the Corporate Association of Microcomputer Professionals (CAMP) in Northbrook, Ill., shows that callers in search of support were placed on hold more than 77% of the time. Once on the line, support representatives weren't able to provide a solution 33% of the time.

Not all bad

It's not as though everyone is unhappy with telephone support. Research from Dataquest/Ledgeway in Framingham, Mass., shows that approximately 25% of users say telephone support is "ideal," and only a small percentage say it is "unacceptable." Fifty percent rated support "acceptable," which they defined as having between 67% and 87% of their questions answered correctly on a first call.

Although CAMP's results fall within this "acceptable" range, it's by a small margin, which indicates that vendors are not passing the support test with flying colors.

It doesn't help matters that it's new employees who often staff support lines. Another complication is the merger, acquisition and consolidation of companies in recent years. This was the case for Geitka. Although he had purchased Textra from Peter Norton Computing, the product was developed by another company, which is where he eventually found help. "Sometimes you have to go to the source in order to get an answer, but finding that source can be difficult," Geitka says.

Connections helpful

One way to get better telephone support is to know someone. IS managers suggest cultivating a personal relationship with someone in the vendor organization, through phone calls and other interactions. They warn to avoid overburdening "inside" sources by calling only when the problem can't be solved through the formal support hierarchy.

Offering to be a beta-test site or doing a vendor a favor can also result in special treatment.

"If you are willing to work with your vendor, they will go the extra mile for you," says Dave Burns, manager of systems and programming at Mueller Brass Co. in Port Huron, Mich. "Because Wang service people know us personally and can borrow equipment from us in a pinch to service other customers, we get rapid response when we really need help."

Part of learning the ropes is keeping careful records of who you last spoke with and how helpful they were.

The Fuller Co. carefully tracks the quality of support for all 12 of its software vendors and ranks them annually, says David Pinkus, manager of MIS at the Lehigh Valley, Pa.-based firm.

When it's time to renew a licensing contract, it helps to know the kind of service the vendor has been providing, Pinkus says. "Whenever I meet with a vendor, I'll always bring up where they rank in our survey and ways they can improve," he says.

It's hard to predict from the outset what kind of telephone support you're going to get. The software vendor who ranks 12 out of 12 — dead last on Fuller's list — is one of the largest and best-established software vendors in the world.

"You have to go through 27 different levels of voice mail in order to get to the right person," Pinkus says. On the other hand, another Fuller vendor is "one guy who works at home and debugs software while holding a baby in his arms," he says. "He gets a very decent rating because we can always reach him."

A lot of finger pointing goes on among vendors, Pinkus adds. "If a vendor doesn't have an answer or the resources to get me an answer, I'd rather they were honest about it," he says. "Then at least I know where I stand."

LaPlante is a free-lance writer based in Palo Alto, Calif.

Support wish list

Here's what users find ideal in a vendor's telephone support offerings:

A fax-on-demand service that faxes answers to complex technical questians.
Problem-tracking software to track a customer's history of problems and support requests.
Natificatian af where they stand in the "hald queue" and haw long they are likely to wait.
Easier access to the developers of the product.
Eliminatian af "callbacks" far simple ar rautine questians.
Access to an on-line bulletin board to leave support requests and have them answered electronically.
Access ta an on-line database af camman technical prablems and salutians.
Expertise on the ways different products from different vendors interact.

Source: Corporate Association of Microcomputer Professionals, Northbrook, Ill.

Buy/Sell/Lease

DEMPSEY.
WHERE IBM® QUALITY IS SECOND NATURE.

• SERIES/1
• 9370
• RS/6000
• INDUSTRIAL PC
• ES/9000
• AS/400
• SYSTEM 36/38
• POINT OF SALE

BUY–LEASE–SELL
• Processors
• Peripherals
• Upgrades

For pretested equipment, flexible financing, configuration planning, technical support and overnight shipping call

(800) 888-2000.

Dempsey BUSINESS SYSTEMS
Where IBM Quality Is Second Nature
18377 Beach Blvd., Suite 323 • Huntington Beach, CA 92648 • (714) 847-8486 • FAX: (714) 847-3149
Authorized Distributor Product Integrator
IBM is a registered trademark of International Business Machines Corporation.

WE BOUGHT IBM®
By the Thousands

Computer Marketplace has bought and sold thousands of IBM systems, tape drives, disk drives, printers and peripherals. We are interested in offering top dollar for your RISC System/6000, AS/400 or System/36.

SYSTEMS & RENTALS
- RISC System/6000™ Systems
- Memory & Features
- AS/400™
- Network Solutions
- System/36
- PS/2

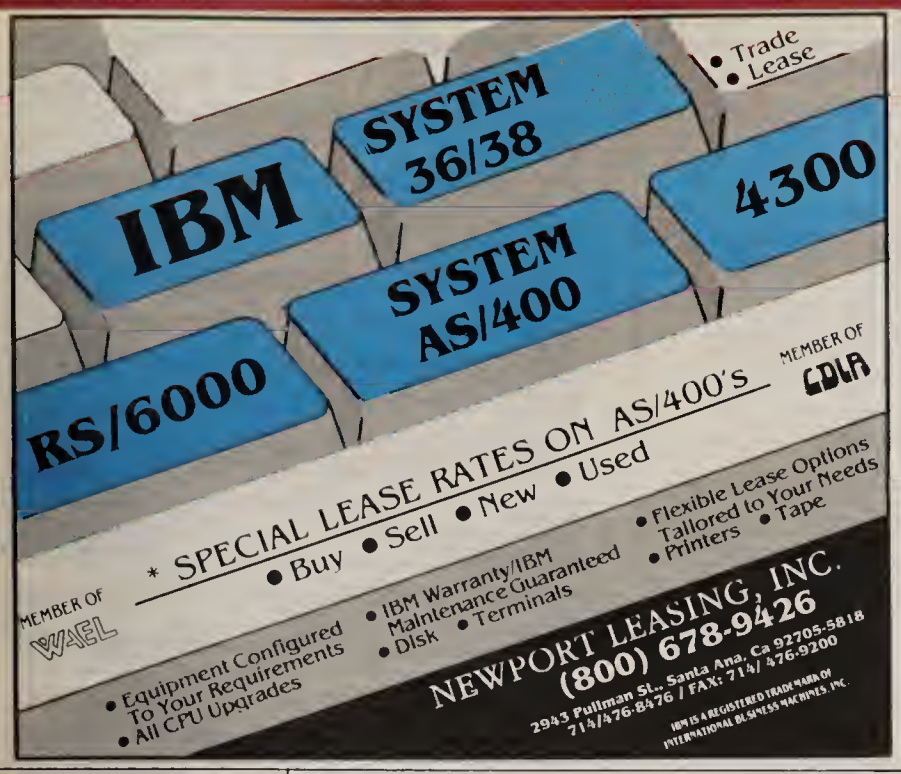
PERIPHERALS
- Controllers
- Disk Drives
- Tape Drives
- Memory Options
- Modems
- Displays
- Printers

BUY • SELL • RENT
5 Offices To Serve You!
COMPUTER MARKETPLACE
(800) 858-1144
(714) 735-2102 FAX (714) 735-5717
205 East 5th Street, Corona, CA 91719
RISC System/6000, AS/400 & PS/2, System/36 are trademarks of IBM

REFURBISHED/USED
• UPS SYSTEMS
• STANDBY GEN SETS
• LIEBERT A/C
• ACCESS FLOORING
262 S. Military Trail
Deerfield Beach, FL 33442
1-800-226-0784
305-425-0638

WANTED: Used Macs!
• We'll pay you top-dollar cash for used Mac equipment! Call for quote.
• We also sell full refurbished Macs at up to 55% discounts w/1-year warranty! "Our 11th year!"
RENTEX (800) 545-2313 dept 55

Buy/Sell/Lease



TAKE NO RISK ON RISC SYSTEM/6000

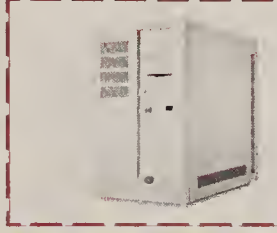
Choose: DATATREND Inc

RISC System/6000 Hardware: Complete systems, upgrades, trades, peripherals, parts

RISC System/6000 Services: Series/1 to RS/6000 Migration, AIX Support/Consultation, Application Re-engineering, Consolidation Services, Data Conversion Services

RISC System/6000 Engineering: Custom Re-configuration, Refurbishment, Complex Systems Integration, Cable Systems Design/Installation, Field Installation, Board Level Repair, Project Packing Services, Configuration Documentation

Enterprise Services
Enterprise-wide planning, Host Connectivity, Process Control, RDBMS Incorporation, Complex Systems Integration, Network Solutions, DAE Incorporation



BUY • SELL • LEASE
Series/1
System 36/38
AS/400
937X, 4300, 468X
PS/2, Industrial PC

Call the "Reliability Company"

1-800-*FOR-RISC*
(1-800-367-7472)
612-942-9830
10250 Valley View Rd., Suite 149, Eden Prairie, MN 55344

Datatrend...
IBM Business Partner
IBM Industry Application Specialist
IBM Subcontractor
IBM DAE Enabler
IBM Account Team Partner

REMEMBER...
Datatrend is also *World Leader* in Series/1
CDLA

Over 629,000 computer professionals read Computerworld weekly.

9370/9221?

EXECUTIVE INFOSOURCE!

BUY
SELL
LEASE

MOST MACHINE FEATURES AND PERIPHERALS IN STOCK

TELEPHONE: (708) 215-9370
FAX: (708) 215-9992
CDLA Member Computer Dealers & Lessors Association

New/Reconditioned digital Equipment

Whatever your requirements are for Digital Equipment, call CSI *first!* Buying, selling, trading, leasing, consignments - we do it all!

CSI sells all equipment with a 30 day unconditional guarantee on parts and labor and is ***eligible for DEC maintenance.***

Offering systems, disk drives, tape drives, printers, terminals, memory, options, boards, upgrades and many more.

Distributors Wanted

CSI Compurex Systems, Inc.
63 Eastman St.
Easton, MA 02334
1-800-426-5499
In Mass. (508) 230-3700
FAX (508) 238-8250

SPECTRA

The complete computer equipment dealer

(714) 970-7000 (800) 745-1233 (714) 970-7095 FAX

BUY • SELL • RENT • LEASE

New & Used: *Processors Peripherals Upgrades*

IBM®
ES/9000, 9370, 4381
AS/400, RS/6000
SYSTEM/88
Point of Sale
Banking
CAD/CAM

NDS®
sun®
Prime®
UNISYS®
XEROX®

digital®
Stratus®
HEWLETT PACKARD®
amdahl®
TANDEM®
...and more!

ANAHEIM CORPORATE CENTER 5101 E. LaPalma Ave., Anaheim, California 92807

Education/Training

COMPUTERWORLD

Product Classified Pages

Examine the issues while computer professionals examine your message.

Call for all the details.

(800) 343-6474
(In MA., 508/879-0700)

CALL NOW FOR...

Dr. James Martin's

Video Education Courses on:

- Object Oriented
- Client Server & Downsizing
- CASE, Techniques & Methodology
- Imaging & Information Management
- Re-Development, Reusability & Re-engineering

For your FREE James Martin Insight Courseware Catalog on Diskette

Call 1-800-526-0452

JAMES MARTIN INSIGHT INC.

ANOTHER REASON WHY COMPUTERWORLD'S PRODUCT CLASSIFIED PAGES WORK ...

Computerworld is the only computer publication to give readers an established classified advertising resource for over two decades! And since *Computerworld* has been the weekly computer newspaper of choice since 1967 - that means *Computerworld's* loyal readers will expect to see your classified message in *Computerworld's Product Classified Pages!*

To place your ad, call John Carrigan, Vice President/Classified Advertising at **800/343-6474 (in MA, 508/879-0700).**

Product Showcase

The multiple PC backup solution: The ADPI One For All Tape Backup System. As easy to install as it is to use. System plugs directly into parallel printer port of your computer without use of controller cards or special adapters. Completely portable and cost effective (one backup system can be used for every PC in your office). Fast backup -- up to 12 meg/min with 600 meg storage. MS/PC-DOS compatible, network compatible. Menu-driven software. Full on-line help. For info. or to order call:

Analog & Digital Peripherals, Inc. (ADPI)
(513) 339-2241
FAX: (513) 339-0070

Complete Keyboard Customizing
Featuring: Custom Key Imprinting
Full Color Keyboard Templates
Keytop Overlays • Language Keyboards
P.O.S. Keys • Custom Keyboards
Training, productivity & marketing solutions!

Hooleon Corp.
P.O. Box 230, Dept. COMW
Cornville, AZ 86325
Free Catalog
800 937-1337
Fax: 602 634-4620

HEAT ; HelpDesk Expert Automation Tool®

HEAT 2.0, the leading PC/LAN HelpDesk Automation Software, is your Support Center Solution for Call Logging and Tracking, Problem Management, and Expert Assistance. CALL FOR FREE DEMO.

Bendata Management Systems, Inc.
1755 Telstar Drive, Ste 100
Colorado Springs, CO 80920
1-719-531-5007
Fax: 1-719-528-4230

Time/Services

USE OUR TECHNOLOGY TO YOUR FINANCIAL ADVANTAGE

Hundreds of Large and Small Companies Gain a Competitive Advantage by Using Comdisco's Nationwide Remote Computing, Information Technology Sourcing and Global Data, Voice and Video Network.

Featuring:

- IBM® CPUs and Peripherals
- Full Range of Systems Software
- Database and Applications Software Support
- Technical & Financial Planning
- Disaster Recovery
- Service Level Guarantees
- Capacity & Platform Transition Planning
- Financial Asset Management

Call: Bob Marino

800-227-6584

COMDISCO®

COMDISCO COMPUTING SERVICES CORP.
430 Gotham Parkway
Carlstadt, NJ 07072
(201) 896-3011

OUTSOURCING, REMOTE COMPUTING, NETWORK MANAGEMENT SERVICES

- IBM MVS/XA Environment
- DB2, IDMS/R, Model 204, CICS and 4 GLs
- Professional Support Staff
- Experienced Migration Management Team
- Flexible Charges, Custom Solutions To Meet Your Needs
- AS/400, Asset
- Support Services
  -Media Conversion
  -Laser, LED & Impact Printing
  -Application Programming
- Network Management Services LAN/WAN/MAN/SNA/PBX
- Technical Support
- 24 Hours Per Day - 7 Days Per Week

May & Speh, inc.
1501 Opus Place - Downers Grove, IL 60515-5713
1-800-729-1501
For More Information Contact: Tony Ranieri

FINALLY!

OUTSOURCING is made easier.

COMPUTER RESERVES will

- Nationally search for all mainframes.
- Match your exact specifications.
- Locate multiple OUTSOURCING sites.
- Negotiate the lowest price for you.

With 1200 placements in 24 years, CRI has creative solutions at NO COST to you!
CALL DON SEIDEN

1 800 882-0988 NJ 201 882-9700

Remote Computing

Achieving Excellence in Customer Service for 25 Years

MVS and VM Environments
- Facilities Management
- Consulting & Programming Support
- Functional Outsourcing

PRC
Strength Through Understanding

Call us at **1-800-531-5489** for a flexible, cost-effective solution, custom tailored to meet your needs.

PRC Inc., 1500 PRC Drive, McLean, VA 22102

REMOTE COMPUTING • OUTSOURCING

- MVS/ESA
- MVS/XA
- DB2
- CICS
- TSO
- IMS/DBDC
- VM/370
- CMS
- DOS/VSE

OVER 150 SOFTWARE PRODUCTS
- DEVELOPMENT
- PRODUCTIVITY
- DEBUGGING
- PERFORMANCE

- TELENET
- SEARSNET
- TYMNET
- IBM INFORMATION NETWORK

EXTRAORDINARY CUSTOMER SERVICE
MIGRATION MANAGEMENT

GIS INFORMATION SYSTEMS, INC
815 Commerce Drive, Oak Brook, IL 60521
708-574-3636
New England 617-595-8000

ALICOMP, INC.

The "Boutique" of the Computer Services World

VM, MVS, VSE
Outsourcing
Timesharing
Consulting
Remote and On Site
Serving Clients Since 1980
(212) 886-3600
an affiliate of Amalgamated Life

REMOTE COMPUTING TIMESHARING FULL SERVICES

- MVS
- DB2
- COBOL
- TSO
- CICS
- ISPF

THIRD PARTY SOFTWARE
MID-RANGE AVAILABLE
TOM POTTS
(313) 451-6226

COMPUTERWORLD
Product Classified Pages
Examines the issues while computer professionals examine your message. Call for all the details.
(800) 343-6474
(In MA., 508/879-0700)

Another Reason Why Computerworld's Product Classified Pages Work...

Computerworld is the only computer publication to give readers on established classified advertising resource for over two decades! And since *Computerworld* has been the weekly computer newspaper of choice since 1967 - that means *Computerworld's* loyal readers will expect to see your classified message in *Computerworld's Product Classified Pages Pages!*

To place your ad, call John Corrigon, Vice President/Classified Advertising, at **800/343-6474 (in MA, 508/879-0700).**

COMPUTERWORLD

Bids/Proposals/Real Estate

METROPOLITAN TRANSPORTATION AUTHORITY NOTICE is hereby given that the Metropolitan Transportation Authority (MTA) will receive proposals as indicated below, on which date they will be opened and reviewed at the indicated time at the Authority's offices at 347 Madison Avenue, New York, N.Y. 10017 (5th floor). Copies of specifications may be secured from **Mr. Angie Phifer, Secretary, Department of Procurement Services, Metropolitan Transportation Authority, 347 Madison Ave., New York, N.Y. 10017.** The criteria for selection in order of importance are

CRITERIA
1 Cost of Off-the-Shelf On-Line Interactive Program Testing/Debugging and On-Line Data Manipulation Software Package including 10 yrs of maintenance
2 Responsiveness to the RFP; this includes but is not limited to providing the information requested in the format specified, degree of promptness for such information, and acceptance of MTA Terms and Conditions
3 Efficient use of the least amount of MTA Data Center system resources needed to support the product
4 Ability to satisfy the technical requirements of the RFP Work Statement
5 Ease of use of the product from a user's perspective
6 Ability to provide proper support, training, ease of implementation, and maintenance

RFP NO. DATE/TIME DUE
6-01-92104-0 9/17/92, 4:00 PM
For "Off-the-Shelf On-Line Interactive Program Testing/Debugging and On-Line Data Manipulation Software Package"

COMPUTERWORLD
Product Classified Pages
gives you buyers with extensive purchase influence.

In fact, a full 95% are involved in purchase decision making for their organizations. They determine needs, evaluate technologies, identify solutions, and select products and vendors for the entire range of information systems, as well as related products and services.

So if you're selling computer products and services, advertise in the newspaper that delivers buyers with volume purchasing influence. Advertise in *Computerworld's Product Classified Pages!*

For more information, call (800) 343-6474
(in MA, 508/879-0700)

It's the *PRODUCT CLASSIFIED PAGES*
Reach Computer Professionals Where They Shop For:

- ☐ Buy/Sell/Lease
- ☐ Software
- ☐ Communications
- ☐ Time/Services
- ☐ Conversions
- ☐ PC Products
- ☐ Hardware
- ☐ Peripherals/Supplies
- ☐ Graphics/Desktop Publishing
- ☐ Bids/Proposals/Real Estate
- ☐ Business Opportunities
- ☐ PC Rentals

CALL NOW!
(800) 343-6474
(In MA., 508/879-0700)

Used Equipment Listings

(1) TI 960B CPU MOS Memory, Powerfail restart and battery backup; (1) Cipher Tape Drive and Formatter 1600 BPI Encoded; (1) Tape Controller; (3) CDC 9766 Disk Drives (300 Megabytes); (3) CDC 9881-91 Disk Packs; (1) Basic Com-Queue with Expansion Chassis [(2) Local Terminal Controllers; (1) Remote Terminal Controller]; (1) Stor-Queue Disk Controller; (1) TI 810 150 CPS Printer; (5) Visual 55 CRT Data Terminals; (2) Com Design Tc-5 4 Port Multiplexers; (4) NEC 300 Baud Modems.
Call Kevin @ 301-742-9551

IBM 9375/Mod 60 with 16MB, BMC, 6010 DASD/Tape and 6020 Workstation Subsystem controllers, 6030 and 6031 (2X) communications processor, 9347 tape drive, 9309 (2X) rack enclosures, 319X video terminals (4 mono and 5 color). No DASD. Best offer. Data Basics Corporation (407) 241-1422.

COMPUTERWORLD
Product Classified Pages
needs only 2 days notice to run your ad!

When you're selling, you want your advertising to hit the market quickly and frequently. You can't afford to wait for an issue that's coming out several weeks -- or months -- into the future. With *Computerworld,* there's no waiting for the next available issue because we've got one for you every week.

What's more, your ad can appear in the Monday issue of *Computerworld* if you order just 2 days prior to the issue. Advertise in the newspaper that won't keep you waiting. Advertise in *Computerworld's Product Classified Pages!*

For more information, call: 800/343-6474
(in MA, 508/879-0700)

COMPUTERWORLD
PRODUCT CLASSIFIED
Where computer buyers meet computer sellers. Every week.

COMPUTERWORLD
Product Classified Pages
showcase your ad by product category!

Whether it's used equipment, software, time, services or just about any other category of computer product or service, *Computerworld's Product Classified Pages* are organized to make your ad visible and to make buying your product easy.

Just look! Computerworld's Product Classified Pages Catagories

software
hardware
conversions
PC rentals
time/services
buy/sell/lease
communications
bids/proposals/real estate
graphics/desktop publishing
peripherals/supplies
business opportunities

So if you're selling computer products or services, advertise in the newspaper that showcases YOUR product or service. Advertise in *Computerworld's Product Classified Pages!*

For more information, call 800/343-6474
(in MA, 508/879-0700)

"...Computerworld's Campus Edition gives us the most direct contact with our target audience of computer and engineering graduates."

- John Wilhite
Manager, Corporate College Relations
Hughes Aircraft Company

Hughes Aircraft, the aerospace electronics giant, is a full products company involved in the research, development, manufacturing, and support of over 100 different technologies. With about 55,000 employees in Southern California, Arizona, and Colorado, Hughes provides 12,000 separate products, services, and functions to the defense, space-related, and commercial industries worldwide. Since John Wilhite's job as Manager, Corporate College Relations is to oversee the recruitment of the country's top technology graduates, he advertises in *Computerworld's Campus Recruitment Edition.*

"Every year, Hughes recruits somewhere between 250 and 300 new graduates. The mainstream of our hiring centers around students with engineering backgrounds. Generally about 75% of our student recruits are in the electrical, mechanical, and computer engineering fields. Another 20% or so have scientific backgrounds, primarily in computer science and physics. The balance of our recruiting, then, is for MBA graduates with strong orientation in MIS or CIS. With one advertisement in *Computerworld's Campus Edition*, we get unique reach to all three of our student audiences.

"During the past few years, computer engineering and computer science graduates have become an increasingly important part of our recruitment efforts. So we need a publication that not only targets the exact audience we're trying to reach but also delivers quality responses. Based on the recruitment success of our first advertisement, we know *Computerworld's Campus Edition* gives us the most direct contact with our target audience of computer and engineering graduates. It definitely generates quality responses from students with the right types of backgrounds.

"In addition to delivering advertising results, the issue's Annual Student Survey serves as an important research tool. Upon receiving data on how students typically view Hughes Aircraft, we felt we needed to strengthen our image in this area. For continued success in recruiting top technical talent, we find feedback like this invaluable.

"To be effective, it's essential that our recruitment advertisement appears in a quality publication that students will read. We know *Computerworld's Campus Edition*, with its meaningful content, will have a long shelf life. Clearly, it's a publication that students will take back to their rooms pass along to fellow students, and keep for future reference. That means our advertisement in *Computerworld's Campus Edition* keeps right on working long after the issue date.

"Again this October, we'll be relying on the cost-efficient reach of *Computerworld's Campus Edition* to take our recruitment message to engineering, computer, and business graduates at leading colleges and universities nationwide."

Computerworld's Campus Recruitment Edition. On October 31, 1992, this exclusive edition reaches 150,000 top students enrolled in America's top computer and engineering degree programs. It's an advertising vehicle that works for John Wilhite at Hughes Aircraft. And it's your best way to recruit America's best computer career students. For all the facts, call John Corrigan, Vice President/Advertising Director, at 800/343-6474 (in MA, 508/879-0700).

Your best way to recruit America's best computer career students ...

COMPUTERWORLD

CAMPUS EDITION

1 800 343-6474

IN MA 508 879-0700

STOCK TRADING INDEX

Industry Almanac

FOCUS ON SOFTWARE

Software Scene
Donaldson, Lufkin & Jenrette Securities Corp.
New York
Aug. 1, 1992

Slowdowns in fiscal second-quarter earnings hurt many software firms' stock prices; only a handful have climbed since the end of May. Investor enthusiasm will not spark until earnings have either stabilized or accelerated.

Expect client/server offerings from **Cognos, Inc.** (COGNF), which is slated to ship PowerHouse Windows for Unix this summer. Business is churning faster for **Ross Systems, Inc.** (ROSS). The company, which traditionally catered to **Digital Equipment Corp.** (DEC) users, is now targeting — and making progress in — Unix and client/server markets as well.

LISA DAVIDSON

Assembling software

A gathering of current brokerage ratings

	Alex. Brown & Sons, Inc.	Bear, Stearns & Co.
Aldus Corp.	Neutral	Hold
Artisoft, Inc.	Strong buy	Not rated
Autodesk, Inc.	Neutral	Not rated
Borland International, Inc.	Buy	Hold
Computer Associates International, Inc.	Buy	Not rated
Lotus Development Corp.	Buy	Hold
Microsoft Corp.	Strong buy	Buy
Sterling Software, Inc.	Buy	Buy
Sungard Data Systems, Inc.	Buy	Hold

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, AUGUST 21, 1992

TOP PERCENT GAINERS

Recognition Equipment	19.05
System Software Assoc.	12.77
Autodesk Inc.	11.42
Platinum Technology	11.21
Cambex Corp.	9.30
Cheyenne Software Inc.	8.57
Printronix Inc.	8.33
Ross Systems	8.20

TOP PERCENT LOSERS

Wang Labs Inc. (b)*	-75.00
Radius Inc.	-32.91
Commodore Int'l	-22.97
Artel Communication Corp.	-20.00
Spinnaker Software	-18.18
Pyramid Technology (L)	-16.67
Bachman Info. Systems	-15.38
Picturetel Corp.	-15.33

TOP DOLLAR GAINERS

Matsushita Electronics (L)	6.25
Autodesk Inc.	4.63
System Software Assoc.	3.00
Nynex Corp.* (H)	2.13
Micro Focus	2.13
Progress Software Corp.	2.13
Platinum Technology	1.63
Recognition Equipment	1.50

TOP DOLLAR LOSERS

Wellfleet Communications (H)	-3.75
Chipcom Corp.	-3.50
Hewlett-Packard Co.*	-3.25
Borland Int'l Inc.*	-3.25
Radius Inc.	-3.25
Novell Inc.*	-3.25
Intel Corp.*	-3.13
Parametric Technology (H)	-3.00

Exch	52-Week		Range	Aug. 21 Close	Wk Net Change	Wk Pct Change
Communications and Network Services			**Off 2.27%**			
OTC	15.00	7.25	3 COM Corp.*	10.88	-0.13	-1.14
NYS	70.63	56.25	American Info Techs Corp.*(H)	69.75	0.38	0.54
NYS	44.88	32.88	AT&T*	42.75	-0.63	-1.44
OTC	4.25	1.00	Artel Communication Corp.	1.00	-0.25	-20.00
NYS	50.63	40.25	Bell Atlantic Corp.	49.25	0.63	1.29
NYS	55.13	43.38	Bellsouth Corp. (H)	54.38	0.50	0.93
NYS	7.25	4.13	Bolt, Beranek & Newman	4.25	-0.25	-5.56
NYS	65.88	36.63	Cabletron Systems	55.50	1.50	2.78
OTC	31.00	17.50	Chipcom Corp.	21.75	-3.50	-13.86
OTC	53.75	18.63	Cisco Systems Inc.	47.25	-1.75	-3.57
OTC	35.25	6.00	Compression Labs Inc.	7.00	-1.00	-12.50
OTC	3.38	0.88	Data Switch Corp.	1.69	0.13	8.00
NYS	23.63	12.38	Digital Comm. Assoc.*	18.38	-0.25	-1.34
OTC	17.25	8.00	Digital Systems Int'l Inc.	9.00	0.00	0.00
OTC	7.00	3.63	DSC Communications	6.13	-0.38	-5.77
OTC	10.88	4.75	Fibronix Int'l Inc.	5.38	0.00	0.00
OTC	37.50	10.50	Filenet Corp.	13.75	0.25	1.85
OTC	3.38	1.13	Gandalf Technologies Inc.	2.00	-0.25	-11.11
OTC	2.25	0.69	Gateway Communications	1.44	0.06	4.58
NYS	5.50	2.13	General Datacomm Inds.	3.38	-0.13	-3.57
ASE	5.88	0.50	Go Video	2.75	-0.25	-8.33
NYS	35.63	28.63	GTE Corp.*	35.00	0.00	0.00
NYS	70.63	50.00	ITT Corp.	66.63	-0.13	-0.19
OTC	36.13	25.25	MCI Commmunications Corp.	32.38	-1.50	-4.43
OTC	14.50	2.25	Microcom Inc.	3.88	0.13	3.33
NYS	18.25	9.50	Network Equipment Tech.*	11.00	0.38	3.53
OTC	25.50	8.00	Network General	10.25	0.25	2.50
OTC	20.00	8.50	Network Systems Corp.	10.75	-0.25	-2.27
OTC	17.88	5.63	Newbridge Networks Corp.	16.50	0.88	5.60
NYS	49.25	33.75	Northern Telecom Ltd.*	34.63	-0.25	-0.72
OTC	65.00	31.75	Novell Inc.*	47.50	-3.25	-6.40
NYS	88.38	69.13	Nynex Corp.* (H)	85.50	2.13	2.55
OTC	37.50	16.50	Octel Communications Corp.	24.75	0.38	1.54
OTC	9.88	4.00	Penril Data Comm. Ntwks.	5.25	0.00	0.00
OTC	53.00	15.88	Picturetel Corp.	15.88	-2.88	-15.33
OTC	18.75	9.75	Proteon Inc.	13.00	-0.75	-5.45
NYS	27.25	11.63	Scientific Atlanta Inc. (H)	27.25	0.50	1.87
NYS	68.88	53.75	Southwestern Bell Corp. (H)	68.63	1.38	2.04
NYS	27.00	20.75	Sprint Corp.	23.38	0.38	1.63
OTC	13.75	4.00	Standard Microsystems Corp	12.00	-0.88	-6.80
OTC	35.75	14.25	Synoptics Communications (H)	34.00	-1.75	-4.90
NYS	40.00	32.88	US West Inc.	38.75	0.63	1.64
OTC	41.50	24.00	Wellfleet Communications (H)	37.75	-3.75	-9.04
PC and Workstations			**Off 3.96%**			
OTC	15.00	4.50	Advanced Logic Research	4.75	0.25	5.56
OTC	70.00	41.50	Apple Computer Inc.*	44.75	0.00	0.00
OTC	32.25	12.00	AST Research Inc.*	12.50	-0.75	-5.66
NYS	19.25	7.13	Commodore Int'l	7.13	-2.13	-22.97
NYS	36.75	22.13	Compaq Computer Corp.*	28.75	-0.88	-2.95
OTC	29.00	13.91	Dell Computer Corp.	24.88	0.88	3.65
OTC	7.75	2.13	Everex Systems Inc.	2.50	0.00	0.00
NYS	34.00	21.25	Harris Corp.	30.75	-1.00	-3.15
NYS	85.00	44.63	Hewlett-Packard Co.*	56.75	-3.25	-5.42
NYS	29.75	14.13	Silicon Graphics	21.25	-0.88	-3.95
OTC	35.88	20.75	Sun Microsystems Inc.*	25.88	0.13	0.49
NYS	31.25	22.50	Tandy Corp.*	22.50	-1.75	-7.22
NYS	11.13	5.13	Zenith Electronics	6.63	0.00	0.00
OTC	25.50	3.13	Zeos International Ltd.	3.13	-0.50	-13.79
Large Systems			**Off 7.59%**			
ASE	20.63	11.63	Amdahl Corp.*	13.13	-0.13	-0.94
NYS	16.13	7.50	Ceridian Corp.	15.00	-0.38	-2.44
NYS	16.38	5.75	Convex Computer	5.88	-0.63	-9.62
OTC	19.63	1.88	Cray Computer	3.38	0.00	0.00
NYS	52.25	23.00	Cray Research Inc.* (L)	23.38	-0.38	-1.58
NYS	22.50	7.13	Data General Corp.	7.75	-0.25	-3.13
NYS	65.50	33.25	Digital Equipment Corp.*	35.13	-2.75	-7.26
NYS	106.38	81.63	IBM*	85.75	-2.63	-2.97
OTC	13.25	7.50	Kendall Square Research	8.50	-0.50	-5.56
NYS	121.25	88.25	Matsushita Electronics (L)	96.38	6.25	6.93
OTC	19.75	8.13	Pyramid Technology (L)	8.13	-1.63	-16.67
OTC	17.88	8.00	Sequent Computer Sys.	15.50	-0.63	-3.88
OTC	18.38	5.00	Sequoia Systems Inc.	7.00	0.50	7.69
NYS	54.25	36.75	Stratus Computer Inc.*	42.63	-2.13	-4.75
NYS	15.13	9.50	Tandem Computers Inc.*	10.50	-0.38	-3.45
NYS	11.75	3.63	Unisys Corp.*	9.13	-0.63	-6.41
ASE	7.50	0.38	Wang Labs Inc. (b)*	0.38	-1.13	-75.00
Software			**Off 1.53%**			
OTC	68.50	34.75	Adobe Systems Inc.	36.75	-0.88	-2.33
OTC	13.25	2.50	Al Corp.	4.25	-0.13	-2.86
OTC	45.00	11.50	Aldus Corp.	13.00	-0.38	-2.80
OTC	19.75	8.50	American Software Inc. (L)	9.13	-0.50	-5.19
OTC	20.00	9.38	Ask Computer Systems	13.50	-0.50	-3.57
OTC	57.25	23.25	Autodesk Inc.	45.13	4.63	11.42
OTC	37.75	8.25	Bachman Info. Systems	8.25	-1.50	-15.38
OTC	42.50	30.50	BGS Systems Inc.	38.00	0.00	0.00
OTC	79.00	37.25	BMC Software Inc.	46.25	-1.50	-3.14
OTC	20.50	9.00	Boole & Babbage	18.25	-0.38	-2.01
OTC	86.75	35.00	Borland Int'l Inc.*	40.13	-3.25	-7.49
OTC	11.25	3.63	CE Software	4.25	-0.38	-8.11
ASE	14.38	6.50	Cheyenne Software Inc.	14.25	1.13	8.57
OTC	20.38	7.25	Cognos Inc.	8.25	-0.13	-1.49
NYS	17.00	7.50	Computer Associates*	13.75	-0.63	-4.35
OTC	12.38	12.00	Computervision Corp.	12.00	0.00	0.00
OTC	21.50	8.50	Comshare Inc.	9.75	-0.50	-4.88
OTC	47.88	6.50	Easel Corp.	8.38	0.38	4.69
OTC	25.50	11.50	Group I Software	15.00	-1.50	-9.09
OTC	6.63	3.50	Hogan Systems Inc.	4.25	-0.50	-10.53
OTC	36.25	18.50	Information Resources	23.00	-1.25	-5.15
OTC	39.25	5.88	Informix Corp.	37.75	-1.25	-3.21
OTC	22.38	12.50	Intergraph Corp.	13.50	0.00	0.00
OTC	15.00	6.13	Interleaf Inc.	8.50	0.00	0.00
OTC	20.25	9.25	Intersolv Inc.	14.00	0.25	1.82
OTC	30.00	10.50	Knowledgeware Inc.	12.00	-0.25	-2.04
OTC	45.25	20.25	Legent Corp.*	40.50	0.50	1.25
OTC	40.75	15.50	Lotus Development*	17.25	-0.13	-0.72
OTC	7.38	1.88	Meca Software	2.25	0.00	0.00
OTC	22.25	6.50	Mentor Graphics	8.00	0.00	0.00
OTC	37.25	27.25	Micro Focus	31.00	2.13	7.36
OTC	20.50	6.50	Micrografx Inc.	8.25	0.25	3.13
OTC	88.84	53.34	Microsoft Corp.*	69.75	-1.25	-1.76
OTC	21.13	9.88	Oracle Corp.*	17.50	-0.38	-2.10
OTC	43.00	15.50	Parametric Technology (H)	37.88	-3.00	-7.34
OTC	11.00	3.50	Phoenix Technologies	4.63	0.00	0.00
OTC	25.25	12.13	Platinum Technology	16.13	1.63	11.21
OTC	46.50	29.00	Progress Software Corp.	40.13	2.13	5.59
OTC	26.63	4.00	Quarterdeck Office Sys.	4.63	-0.25	-5.13
OTC	32.75	11.75	Rainbow Technologies Inc.	16.25	0.25	1.56
OTC	26.75	8.50	Rasterops	8.50	-1.00	-10.53
OTC	17.25	5.38	Ross Systems	8.25	0.63	8.20
OTC	12.13	8.50	Sapiens USA Inc.	10.88	-0.13	-1.14
OTC	26.25	7.50	Software Publishing Corp.	8.00	-1.25	-13.51
OTC	8.50	2.00	Software Toolworks Inc.	3.00	0.19	6.65
OTC	7.25	1.75	Spinnaker Software	2.25	-0.50	-18.18
OTC	16.50	6.25	State of the Art	6.75	0.25	3.85
NYS	25.25	13.00	Sterling Software Inc.	18.63	1.00	5.67
OTC	30.00	13.00	Struct. Dynamics Research	13.00	-1.25	-8.77
OTC	31.75	15.25	Sybase Inc.	28.50	-0.13	-0.44
OTC	51.00	16.00	Symantec Corp. (L)	17.25	0.50	2.99
NYS	15.50	5.25	Systems Center Inc.*	6.38	-0.13	-1.92
OTC	34.25	12.16	System Software Assoc.	26.50	3.00	12.77
OTC	23.75	14.50	Walker Interactive Systems	15.25	-0.88	-5.43
OTC	6.63	2.13	Wordstar	2.25	-0.25	-10.00
Semiconductors			**Off 4.73%**			
NYS	21.50	7.38	Advanced Micro Devices	8.63	-0.75	-8.00
NYS	11.13	7.00	Analog Devices Inc.	9.75	-0.25	-2.50
OTC	13.88	6.75	Atmel Corp.	8.13	-0.25	-2.99
OTC	14.13	4.25	Chips and Technologies	4.50	0.00	0.00
NYS	22.63	7.38	Cypress Semiconductor Corp	8.75	-0.50	-5.41
NYS	10.88	6.25	Dallas Semiconductor	10.00	-0.50	-4.76
OTC	68.75	38.50	Intel Corp.*	56.50	-3.13	-5.24
NYS	9.88	5.50	LSI Logic Corp.	5.50	-0.38	-6.38
NYS	22.38	12.13	Micron Technology	15.63	-0.75	-4.58
NYS	88.13	54.00	Motorola Inc.*	85.13	-0.38	-0.44
NYS	11.75	3.88	National Semiconductor* (H)	10.13	-1.38	-11.96
OTC	27.00	8.75	Sierra Semiconductor (L)	8.75	-0.25	-2.78
NYS	42.38	26.00	Texas Instruments*	38.25	-2.88	-6.99
OTC	10.50	6.00	VLSI Technology	6.88	0.13	1.85
OTC	9.75	2.13	Weitek	3.13	-0.13	-3.85
ASE	5.63	2.00	Western Digital Corp.	4.50	-0.25	-5.26
OTC	32.50	17.25	Xilinx	19.75	-2.75	-12.22
OTC	11.50	4.63	Zilog Inc.	6.75	-0.25	-3.57
Peripherals and Subsystems			**Off 4.10%**			
OTC	10.00	2.75	Archive Corp.	6.63	-0.25	-3.64
OTC	25.25	11.25	Banctec Inc.	25.25	-0.50	-1.94
OTC	23.50	8.50	Cambex Corp.	11.75	1.00	9.30
ASE	12.25	4.91	Cognitronics Corp.	10.75	0.13	1.18
NYS	23.88	12.50	Conner Peripherals*	19.13	-1.38	-6.71
ASE	19.66	4.38	Dataram Corp.	7.00	-0.88	-11.11
NYS	19.25	5.88	EMC Corp.	16.50	-0.75	-4.35
OTC	8.88	4.75	Emulex Corp.	6.13	-1.00	-14.04
OTC	23.00	14.25	Evans & Sutherland	16.00	0.00	0.00
OTC	40.63	19.88	Exabyte	23.88	-2.88	-10.75
OTC	27.25	15.75	Intelligent Info. Systems	22.25	-1.00	-4.30
OTC	11.25	4.75	Iomega Corp.	7.13	0.13	1.79
OTC	34.75	12.00	IPL Systems Inc.	12.00	-1.75	-12.73
OTC	24.50	10.75	Komag Inc.	15.25	-1.00	-6.15
OTC	14.00	2.63	Maxtor Corp.*	13.38	-0.63	-4.46
OTC	12.63	5.75	Micropolis Corp.	9.13	-1.00	-9.88
NYS	101.25	85.25	3M Co.	98.25	-2.00	-2.00
OTC	7.25	3.50	Printronix Inc.	6.50	0.50	8.33
NYS	26.75	7.00	QMS Inc.	8.75	-1.13	-11.39
OTC	18.00	8.88	Quantum Corp.	13.75	-0.50	-3.51
OTC	12.75	6.00	Radius Inc.	6.63	-3.25	-32.91
NYS	12.88	5.88	Recognition Equipment	9.38	1.50	19.05
OTC	13.13	5.38	Rexon Inc.	9.25	0.50	5.71
OTC	17.63	7.25	Seagate Technology*	12.88	-1.88	-12.71
NYS	78.00	26.88	Storage Technology*	27.88	-1.25	-4.29
NYS	30.88	16.00	Tektronix Inc.	19.25	0.13	0.65
NYS	82.25	56.88	Xerox Corp.	74.13	0.13	0.17
Services			**Off 0.39%**			
OTC	18.63	11.66	American Mgmt. Systems*	18.63	1.13	6.43
NYS	5.38	2.88	Anacomp Inc.	3.38	0.00	0.00
OTC	19.00	12.50	Analysts Int'l	16.75	-0.13	-0.74
NYS	49.00	30.25	Auto Data Processing*	43.88	-0.50	-1.13
NYS	24.16	12.50	Comdisco Inc.*	16.50	-0.13	-0.75
OTC	13.50	7.75	Computer Horizons	9.38	-0.38	-3.85
NYS	84.88	57.00	Computer Sciences*	65.50	1.00	1.55
NYS	10.13	7.00	Computer Task Group	8.13	-0.13	-1.52
OTC	40.50	15.00	CompUSA Inc.	25.25	0.75	3.06
OTC	19.25	7.00	Corporate Software	7.75	0.00	0.00
OTC	30.75	9.75	Egghead Discount Software (L)	10.00	-0.75	-6.98
NYS	33.06	23.19	General Motors E (EDS)*	28.00	-0.88	-3.03
OTC	30.38	6.25	Intelligent Electronics	9.00	-1.13	-11.11
OTC	14.88	3.00	Merisel	7.50	0.38	5.26
OTC	15.75	7.00	Microage Inc.	8.88	-0.13	-1.39
OTC	27.50	15.34	Paychex	25.50	0.00	0.00
NYS	73.00	48.50	Policy Management Sys.	69.88	-0.13	-0.18
NYS	44.50	22.38	Reynolds and Reynolds	41.75	0.00	0.00
OTC	32.00	21.25	SEI Corp.	23.13	0.38	1.65
OTC	24.38	16.88	Shared Medical Systems	19.88	0.00	0.00
OTC	26.25	13.50	Sungard Data Systems	25.50	1.00	4.08
NYS	4.38	1.13	Ultimate Corp.	1.75	0.00	0.00

KEY: (H) = New annual high (L) = New annual low

* Companies tracked in Computerworld Stock Index

Copyright Nordby International, Inc., Boulder, Colo.

This information is obtained from sources believed to be reliable but cannot be guaranteed to be completely accurate. This information is subject to change without notice.

Second-class postage paid at Framingham, Mass., and additional mailing offices. *Computerworld* (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Copyright 1992 by CW Publishing/Inc. All rights reserved. *Computerworld* can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. *Computerworld* is indexed. Back issues, if available, may be purchased through Margaret McIndoe. Photocopy rights: permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CW Publishing/Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, 508-744-3350. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $2.00 a copy: U.S. — $48 a year; Canada — $110 a year; Central & So. America — $130 (surface), $250.00 (airmail) a year; Europe — $195 a year; all other countries — $295 a year. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Subscriptions call toll free (800) 669-1002.
POSTMASTER: Send Form 3579 (Change of Address) to *Computerworld*, P.O. Box 2044, Marion, OH 43305.

IN BRIEF

HP Q3 sales off 1%

■ As expected, **Hewlett-Packard Co.** last week posted third-quarter earnings of $191 million, off 1% from the year earlier period. Revenue for the quarter ended July 31 increased 15% to $4 billion. The Palo Alto, Calif.-based company attributed the earnings decline to a mixed sales environment: Demand for high ticket items was soft, while purchases of lower priced items remained strong. Meanwhile, HP was hit with a securities fraud class-action suit following a 17% decline on Aug. 7 on the price of its common stock after the firm's disclosure of lower-than-expected financial results [CW, Aug. 10]. HP said the suit is without merit.

■ **Dell Computer Corp.** announced record sales of $457 million for its fiscal second quarter, a 129% increase from the year earlier period. Net income in the quarter ended Aug. 2 increased 77% to $21.9 million, the Austin, Texas-based company said. Dell's strong showing contrasts starkly with less-than-stellar results recently revealed by **Zeos International Ltd.** and **Northgate Computer Systems, Inc.**

■ Cisco Systems, **Inc.** reported fiscal fourth-quarter net profits of $13.2 million, up 106% from the comparable period last year. Revenue rose 95% to $110.7 million in the quarter ended July 26, the Menlo Park, Calif., company said.

■ **Sequoia Systems, Inc.** reported a fourth-quarter net loss of $860,021 compared with a profit of $2.8 million in the corresponding period last year. Revenue in the period was $71 million, up 12% from the same period last year, the Marlboro, Mass., company said. The company attributed the loss to lower-than-expected sales related, in part, to delays in closing major transactions, the write-off of uncollected receivables and tightened credit terms.

Trade pact could spur exports to Mexico

Agreement offers vendors alternative to Far East manufacturing but could cost domestic jobs

BY GARY ANTHES
CW STAFF

WASHINGTON, D.C. — U.S. vendors of computer hardware, software and services said the recent free-trade agreement with Mexico will boost sales in the fastest growing market in North America and will provide an attractive alternative to Far East manufacturing sites.

The proposed North American Free Trade Agreement (NAFTA) preserves the tariff-elimination schedule in the 1988 U.S.-Canada Free Trade Agreement, and it will phase out the high duties on computer hardware imported into Mexico from the U.S.

Those tariffs boost the cost of U.S. products in Mexico by about 10% for parts, 15% for subassemblies and 20% for complete systems. It will have little impact on U.S. vendors that are pursuing Canadian business.

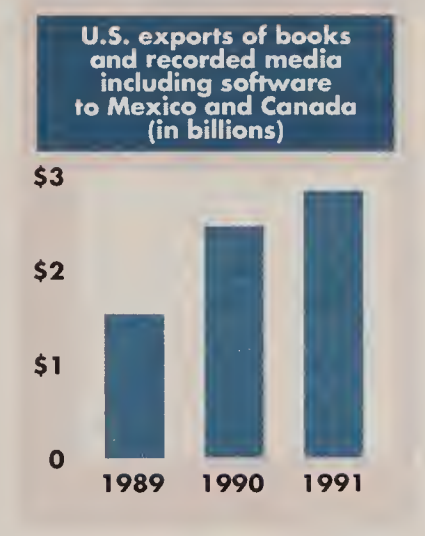
Big business

"Mexico is our fastest growing Latin American market, even with the 20% tariff," said William Fasig, manager of international government affairs and trade at Apple Computer, Inc. "As the tariff phases down, obviously that will have a significant impact on our business."

However, some industry sources said the greatest benefit will not be the reduced tariffs as much as NAFTA's stimulus to the Mexican economy as a whole, which now supports $1 billion in annual sales for information technology.

Borderless business

Vendors hope the recent North American Free Trade Agreement accelerates growth in the Mexican and Canadian markets



Source: Office of U.S. Trade Representative

"Mexico is a developing country of substantial size, and it's at the stage of economic takeoff," said Edward J. Black, vice president and general counsel at the Computer and Communications Industry Association. "Small and large businesses are expanding, and all of them are prime candidates for buying our products."

Cutting red tape

A spokesman for IBM said it welcomed trade reforms that will make it easier for U.S. firms to invest in the Mexican economy. He said that when IBM attempted several years ago to expand a Guadalajara plant that makes midrange systems and Personal System/2s, the company had to spend a lot of time negotiating away various restrictions that would have made the investment untenable. "That process will now be substantially eased," he said.

Perhaps sensitive to the charge that NAFTA will export American jobs to Mexico, and mindful that the agreement has not yet been approved by Congress, none of the major manufacturers polled by *Computerworld* said the agreement would encourage them to open plants south of the border.

But Gary Wilmarth, a computer trade specialist at the Hartford, Conn., law firm of Day, Berry & Howard, said low labor rates, the proximity to the U.S. and the free-trade agreement may cause some computer and electronic companies to shift operations in the Far East to Mexico.

Black said he supported that scenario and added that it would allow U.S.-based companies to leave some of their senior management and technical people at home where they can commute to Mexico from Florida, Texas or California relatively easily.

Promises, promises

In other terms of interest to the computer industry, Mexico promised to do the following:

- Strengthen intellectual property rights protections with the intent of giving computer software copyrights the same protection in Mexico as they enjoy in the U.S.
- Give owners of software copyrights the right to prohibit the rental of their programs.
- Treat U.S. computer services firms no less favorably than Mexican ones.
- Eliminate discriminatory restrictions on U.S. sales to and investments in the $6 billion Mexican market for telecommunications equipment and services.
- Not discriminate in favor of Mexican companies bidding on government jobs.

IBM jump-starts OEM business with chip deal

Reply says IBM's competitive prices key factor

BY MICHAEL FITZGERALD
CW STAFF

SAN JOSE, Calif. — IBM recently landed its first chip customer. Reply Corp., a $50 million manufacturer of Personal System/2 Micro Channel Architecture (MCA) clones based here, agreed to sell systems that use IBM's SLC microprocessor and random-access memory.

The OEM deal offers a glimpse into how IBM is approaching a new business that it hopes will generate billions in revenue by 1995 [CW, June 15].

Steve Petracca, Reply's president and chief executive officer and a former IBM employee, said, "It's going to take a while for them to close other deals" for the SLC.

"It's not nearly as easy for them to work with other people as it was for me," Petracca said. "I know which hurdles to jump."

Analysts contacted adopted a wait-and-see attitude about whether this signals that IBM can play a significant role in the OEM market. "If they can't get Reply, they can't get anybody," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. Zwetchkenbaum described Reply's focus to be on MCA, OS/2 and having a former IBM insider as head of the company.

Persistence pays off

Petracca said he approached IBM about selling the chip to him when it was first announced but was rebuffed. He said his refusal to take no for an answer eventually helped sway IBM. Once IBM agreed to talk with him, the pace of negotiations was surprisingly rapid.

"I said, 'We can get this deal done in 30 days and ship in 60 days,' and they thought I was crazy, initially," Petracca said. In fact, the first Reply personal computers with SLCs are scheduled to ship within 90 days of initial talks. "I'm sure they'd rather close a big deal with Michael Dell or NCR, but [those companies] can't move as fast as we can."

An IBM spokesman said Reply's small size did help close the deal quickly.

Petracca said he credited IBM with moving "very aggressively, from both a price and delivery standpoint. This isn't the same company I worked for."

Petracca said that IBM's willingness to sell both single in-line memory modules and the SLC at competitive prices was a key to his final decision to buy the SLC from IBM. Reply's SLC-based systems, which ship today, cost $1,195, $1,290 less than IBM's least-expensive SLC-based PC.

IBM's license agreement with Intel Corp. for the 386SLC prevents it from reselling the chip directly, but it can put it on an upgrade board. Accordingly, IBM and Reply designed a board specifically for Reply's systems.

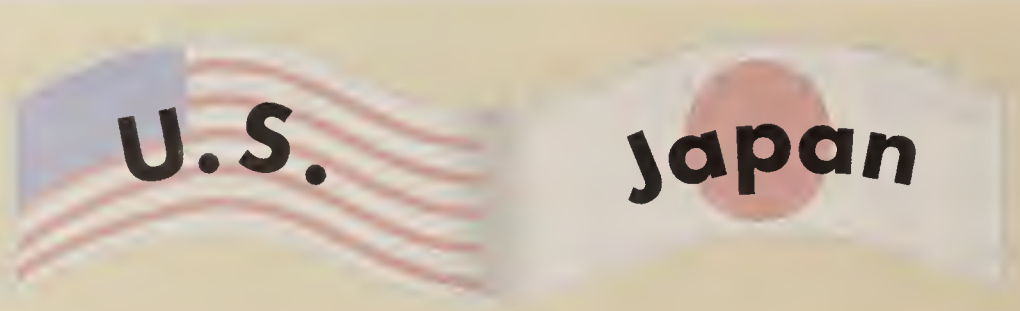
Petracca called the SLC a major advantage for Reply, which plans to discontinue its line of 386SX-based systems. However, he acknowledged that his company will face significant challenges if IBM's scheduled Sept. 22 PC announcement is as sweeping as some expect.

> "I'M SURE they'd rather close a big deal with Michael Dell or NCR, but [those companies] can't move as fast as we can."
>
> STEVE PETRACCA
> REPLY

Nonetheless, "We've committed to our customers that we'll save them a certain percentage. We have the capability to do that," Petracca said.

Reply recently cut prices by as much as 45%: The company's systems now sell for half the price of comparable IBM systems.

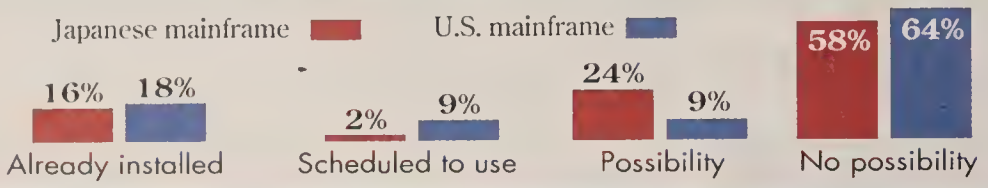
TRENDS



The status of application backlogs, Unix and other software issues in Japanese and U.S. companies

Opening up

27% of responding U.S. IBM mainframe sites are very likely to implement some form of Unix in the next 12 months compared with 18% of Japanese sites



Selection priorites

When choosing software, innovative and easy-to-use products are high on both countries' lists. Details such as documentation and support concern the U.S. more.

	Japan	U.S.
Ease of use	28%	23%
Features	23%	24%
Price	15%	13%
Support	8%	13%
Documentation	6%	18%

Top 5 list

Thinking growth

Japan's software market is relatively small compared with the U.S.', but it's growing fast

1992 software market growth

Packaged software market size

$34 billion $5.2 billion

Backlog fix

Application backlogs are common for all, but preferred solutions vary considerably

Top 3 Japanese solutions:		Top 3 U.S. solutions:	
Limit investment in hardware/software	38%	More use of productivity tools	31%
Hire or develop IS professionals	17%	Purchase packaged software	20%
Development support tools	14%	Retain outside programmers	16%

For companies with more than 1,000 employees

Base: 1,952 Japanese MIS directors; 1,349 U.S.-based senior software managers

Source: Sentry Market Research, Westboro, Mass.

CW Chart: Janell Genovese

NEXT WEEK

Which path? Is the ticket to the CIO suite an MBA? Or a master's in computer science? Or both? Next week, Computer Careers traces the career paths of **Nick Rudd**, CIO at Young & Rubicam, and Rich Nydick, vice president of IS at the Hibbert Group, to answer the age-old question. Their experiences may surprise you.

Claudio Edinger

While OS/2 Version 2.0 holds promise with its ability to multitask DOS and Windows applications, potential users with certain mixed-vendor environments need to be cautious, consultant Fabian Pascal says. Pascal, who has a non-IBM hardware setup, reveals some OS/2 quirks and how to get around them. See In Depth.

INSIDE LINES

Better late . . .

▶ Computer Associates is definitely getting serious about microcomputer software. At the opening of last week's Systems Software Conference in New Orleans, Phyllis Pallacios, the conference chairwoman, told the 1,200 attendees that CA was offering up to $1,000 worth of free micro software to each user in attendance. Though micro software sales make up only 10% to 12% of CA's $1.5 billion in annual revenue, the Islandia, N.Y., software giant hopes to leverage its large mainframe-oriented customer base with downsized PC-based applications.

Up the down escalator?

▶ It looks like IBM is not far away from hitting the mass market channels with new machines. In preparation for its big Sept. 22 product blitz, Big Blue is loading the channel with new configurations that have preloaded software — although whether the software is Windows is unclear. Sources say Service Merchandise will sell a $1,900 20-MHz 486SX PS/1.

Rainbow over the horizon

▶ Late September marks the introduction of the first color pen-based system. Dauphin Technology will announce the Dauphin 5500 Pentop, a 5½-pound system with an STN (passive-matrix) screen. Inside is a 25-MHz Intel 80386SL chip, 4M bytes of RAM and an 80M- or 130M-byte hard drive. Pricing was not available. IBM and NCR are expected to bring out new versions of their pen-based products next month as well.

Server flexing

▶ One user interested in Compaq's upcoming server announcement, which sources have pegged for NetWorld in October, said he expects to see a 100-MHz 486 machine from the folks in Houston. He also expects to see a radical SystemPro redesign, which could reflect the TriFlex architecture that has already been talked about. But some users are worried about compatibility between the new and the old Pros.

Stacked DEC

▶ DEC will shortly disclose a modular storage strategy replete with plug-and-play products. Users will be able to integrate a range of controllers and swap adapters for DEC's CI, VMS or SCSI-2 buses. These can then be attached to disk drives ranging from 2.3 in. to 5½ in. or a mix of tape and optical devices. Initial products will include a box that combines CI, DSSI SCSI and also FDDI, sources said. Software RAID implementations will also be available so users will be able to reconfigure their disk arrays to be compliant with either RAID-1, -3 or -5, according to an application's needs.

Parents spurned

▶ Not all Sears and IBM enterprises have signed up for the companies' new joint network outsourcing venture, Advantis. IBM/Sears joint venture Prodigy, the consumer information company, just extended its contract with Advantis rival BT Tymnet for another few years.

Aloha means hello and goodbye

▶ As their employer filed Chapter 11 last week, selected high-producing sales reps from Wang Labs partied in Hawaii, blissfully removed from the hoo-ha back on the mainland. The vacation was part of Achievers' Week, a program begun during Wang's heyday under former President John Cunningham to reward salesmen who beat quotas.

Word is that Apple USA Chief Robert Puette has fallen out of favor with the company's directors and may soon resign. Industry watchers say ex-HP exec Puette alienated Apple top brass with his reluctance to enter the mass market now ruled by IBM-compatible PCs. Puette's stature took another hit last month when he was moved under Ian Diery, formerly his counterpart at Apple Pacific. If there was a soap opera about Apple, would they call it As the Worm Turns? *Bad puns aside, phone, fax or CompuServe news tips to News Editor Alan Alper at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try* Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555.*

Informix Database Technology Helps Kmart Know What Its Customers Want.

When Kmart wanted to move ahead in the highly competitive retail industry, they turned to us, Informix, and our experts in UNIX® relational database management systems.

Inventory Control Nationwide.

Kmart needed a fault-tolerant database that linked order entry, price verification, shelf-price updates, and complete inventory control for over 2,500 stores nationwide.

Kmart chose the Informix UNIX-based solution.

Hand-Held, Radio Frequency Computing.

With its new information network, multiprocessors, and hand-held DOS radio frequency computers, shelf pricing and complete inventory control are easily managed in less than a minute directly from the store floor.

The information from the database allows Kmart to make better decisions that help keep products on shelves, give faster check-out service, and keep excess inventory at a minimum—all of which helps Kmart keep a step ahead of the competition.

Kmart and thousands of other companies have called on us for 12 years to successfully handle their critical data.

If you're considering UNIX for data management, talk to Informix. Because we're the experts.

Call 1-800-688-IFMX.

INFORMIX®

THE UNIX DATABASE EXPERTS.

© 1992 Informix Software, Inc. Informix is a registered trademark of Informix Software, Inc.
All other names indicated by ® or ™ are registered trademarks or trademarks of their respective manufacturers.

If you run database applications on a mainframe, we admire your patience.

Computers have spoiled us all.

When we first saw them finish tasks in minutes that used to take hours, we were impressed. When they did it in seconds, we were ecstatic.

But then what happened? Your mainframe took on more tasks, more users, more data. And now, with all the other demands being placed on the host, your database users have to sit there and wait for their information.

Quite a few companies have solved that problem by offloading some of their mainframe applications to Sun™ SPARCserver™ systems.

Our new multiprocessing SPARCserver 600MP Series is the very model for fast database throughput. Load one with four processors, and you're in for some of the industry's best transaction processing numbers.*

Then you can boost performance up to 50% more with Sun Database Excelerator™ software. Besides speeding up transactions, it also lets you add more users.

Still, the value of a Sun SPARCserver is not only that it keeps people working instead of waiting.

It also keeps you from worrying.

You don't have to worry about the cost, because a SPARCserver system costs far less than typical mainframe expansion options.

You don't have to worry about data access, because users will enjoy timely and transparent access to all systems on the network — including the mainframe.

And you don't have to worry about which database will run on your Sun SPARCserver, because software is available from all of the major DBMS vendors.

Look, computers impressed you once. A computer can impress you again. Call 1-800-426-5321, ext. 465, for our Database Performance Brief.

Go on, call. Your company has waited long enough.

Sun Microsystems
Computer Corporation

*Among all the UNIX servers made today, the Sun SPARCserver 690MP recently scored the highest Transaction Processing Performance Council benchmarks for price and performance (TPC-A). Details will be included in the Database Performance Brief offered above.

©1992 Sun Microsystems, Inc. Sun, Sun Microsystems, the Sun logo and DataBase Excelerator are trademarks or registered trademarks of Sun Microsystems, Inc. All SPARC trademarks, including the SCD Compliant logo, are trademarks or registered trademarks of SPARC International, Inc. SPARCserver is licensed exclusively to Sun Microsystems, Inc. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc. All other product or service names mentioned herein are trademarks of their respective owners.